

AQ Summary: There has been persistent soupy conditions in the southern SJV for last few days, but it is cleaner in the northern end because of a generally northerly flow. Tonight, winds are expected to pick up and could be locally breezy (>10 kts), so PM2.5 levels may drop a bit. The SJV APCD forecaster expects Fresno levels to drop the most with marine flow through the Pacheco Pass (near Madera) – this flow typically fizzles by Hanford. For Wednesday, Bakersfield, Visalia, and Porterville should be in the 60's ug/m3 and Fresno should drop to the 40's ug/m3. For Thursday and Friday, PM2.5 levels are likely to drop (e.g., Bakersfield & Fresno : 20-30s), but the forecaster doesn't expect the SJV to be cleaned out like during the event around Jan. 27th; this forecast is somewhat uncertain for Thursday & Friday.

Weather Summary

WEDNESDAY: SJV Region free of clouds throughout the day. Fog likely to be present in the morning, but stronger winds after frontal passage will prevent it from becoming dense. Low level clouds may impact Bakersfield and Porterville (like Monday).

PODEX Models indicate that a somewhat extensive clear patch of water is present off of the SF and LA coasts. However, they do not agree about the extent of low clouds and the presence of high clouds. NWS Monterey and Oxnard gave a 50/50 chance right now of that clear patch being present (depends on the cold front today). The farther west, the more clear of clouds right now.

THURSDAY:

SJV Strong trough moving brings first cirrus and then nimbostratus to the region by Thursday afternoon and into Friday.










PODEX Models indicate some clearing after the passage of the cold front, but disagree again on extent of coverage and the types of cloud present. NWS Oxnard and Monterey indicate the same forecast for Thursday as for Wednesday, with the possibility of clear patches of water, but the uncertainty is very high (depends on that second cold front).

DISCOVER-AQ / PODEX Forecast Briefing










February 5, 2013

Clare Flynn
Bryan Duncan










Fresno

TODAY	TONIGHT	WEDNESDAY	WEDNESDAY NIGHT	THURSDAY	THURSDAY NIGHT	FRIDAY	FRIDAY NIGHT	SATURDAY
								
Dense Fog High: 63 °F	Dense Fog Low: 40 °F	Sunny High: 60 °F	Partly Cloudy Low: 40 °F	Partly Sunny High: 58 °F	Chance Rain Low: 41 °F 40%	Chance Showers High: 52 °F 50%	Slight Chc Showers Low: 35 °F 20%	Mostly Sunny High: 53 °F










Bakersfield

TODAY	TONIGHT	WEDNESDAY	WEDNESDAY NIGHT	THURSDAY	THURSDAY NIGHT	FRIDAY	FRIDAY NIGHT	SATURDAY
								
Sunny High: 63 °F	Mostly Clear Low: 40 °F	Sunny High: 59 °F	Mostly Clear Low: 40 °F	Mostly Sunny High: 58 °F	Chance Rain Low: 40 °F 40%	Chance Showers High: 51 °F 50%	Chance Showers Low: 35 °F 30%	Mostly Sunny High: 53 °F










San Nicolas

Today	Tonight	Wednesday	Wednesday Night	Thursday	Thursday Night	Friday	Friday Night	Saturday
								
WNW 15kt < 1ft	NW 20kt < 1ft	NW 15kt < 1ft	NW 15kt < 1ft	NW 20kt < 1ft	WNW 25kt < 1ft	NW 30kt < 1ft	NW 30kt < 1ft	WNW 25kt < 1ft

Monterey

TODAY	TONIGHT	WEDNESDAY	WEDNESDAY NIGHT	THURSDAY	THURSDAY NIGHT	FRIDAY	FRIDAY NIGHT	SATURDAY
								
Mostly Cloudy High: 52 °F	Partly Cloudy Low: 42 °F	Mostly Sunny High: 53 °F	Increasing Clouds Low: 42 °F	Chance Showers High: 50 °F	Showers Likely Low: 41 °F	Chance Showers High: 51 °F	Partly Cloudy Low: 40 °F	Sunny High: 51 °F

Palmdale

TODAY	TONIGHT	WEDNESDAY	WEDNESDAY NIGHT	THURSDAY	THURSDAY NIGHT	FRIDAY	FRIDAY NIGHT	SATURDAY
								
Breezy High: 69 °F	Mostly Clear Low: 42 °F	Sunny High: 63 °F	Mostly Clear Low: 41 °F	Mostly Sunny High: 59 °F	Chance Rain Low: 40 °F	Chance Rain High: 48 °F	Chance Rain/Snow Low: 33 °F	Mostly Sunny High: 49 °F

Current Conditions

BAKERSFIELD CA

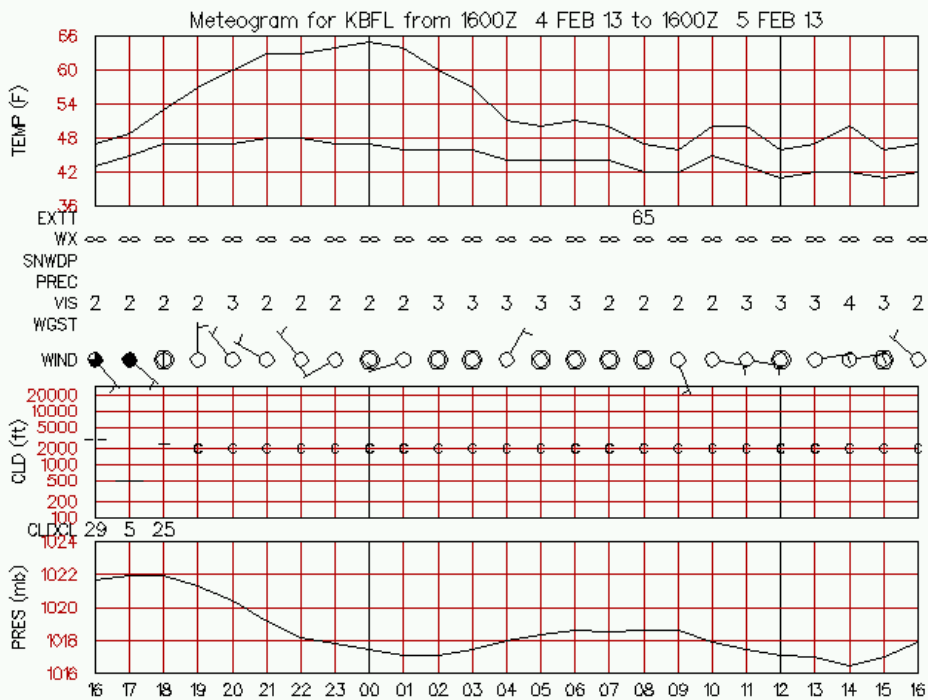


Fog
46°F
8°C

Humidity 87%
Wind Speed NW 3 MPH
Barometer 30.06 in
Dewpoint 43°F (6°C)
Visibility 1.75 mi

Last Update on 05 Feb 8:02 am PST

▼ Plymouth State Weather Center ▼

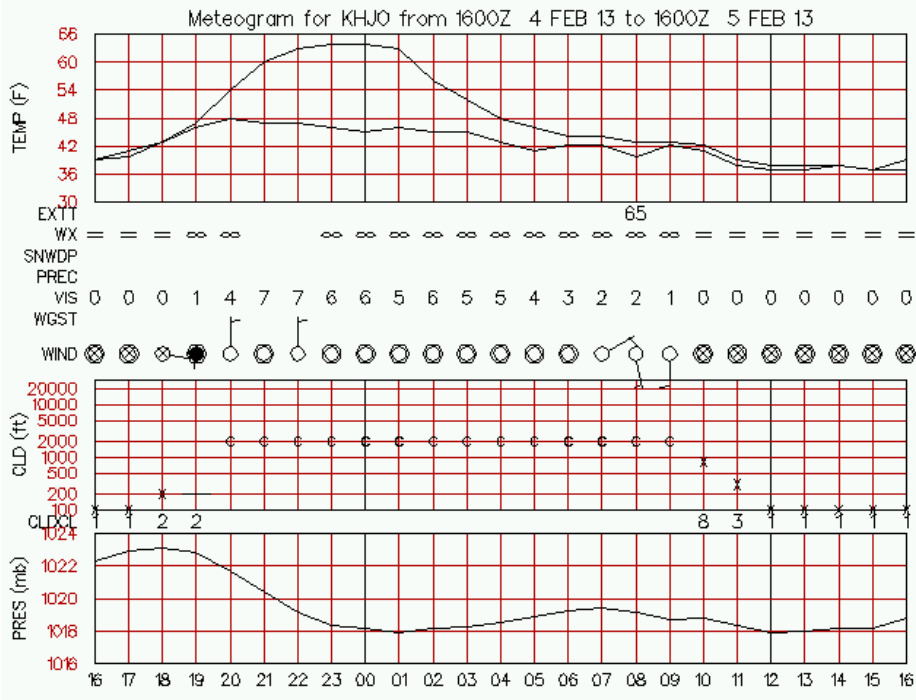


DENSE FOG ADVISORY until 11 am PST

HANFORD

Fog

▼ Plymouth State Weather Center ▼



Current Conditions

FRESNO CA



Fog

45°F

7°C

Humidity 90%

Wind Speed calm

Barometer 30.06 in (1018.0 mb)

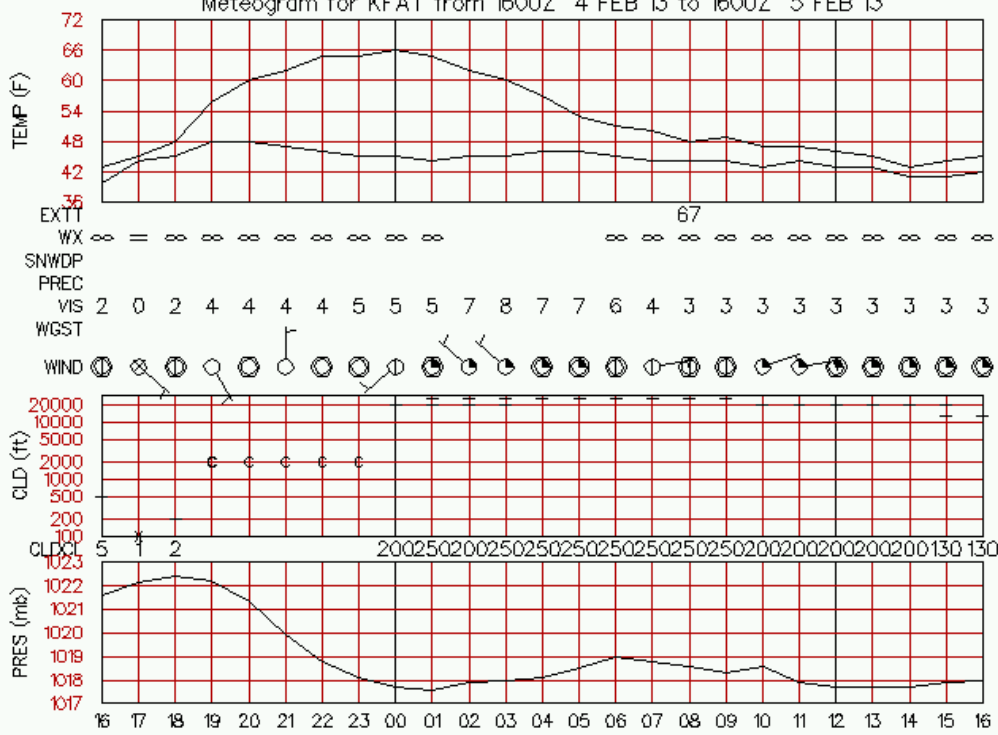
Dewpoint 42°F (6°C)

Visibility 3.00 mi

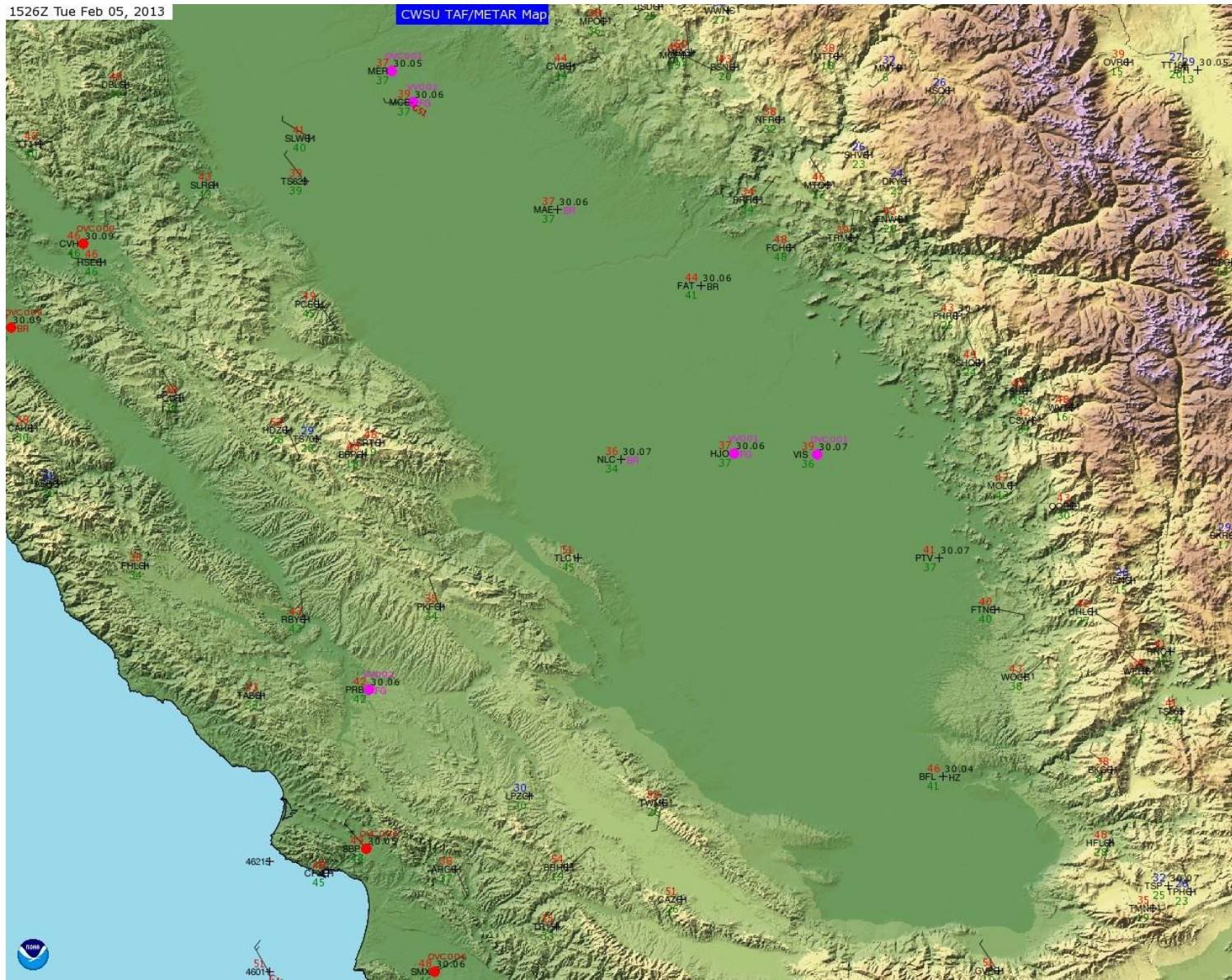
Last Update on 05 Feb 7:53 am PST

▼ Plymouth State Weather Center ▼

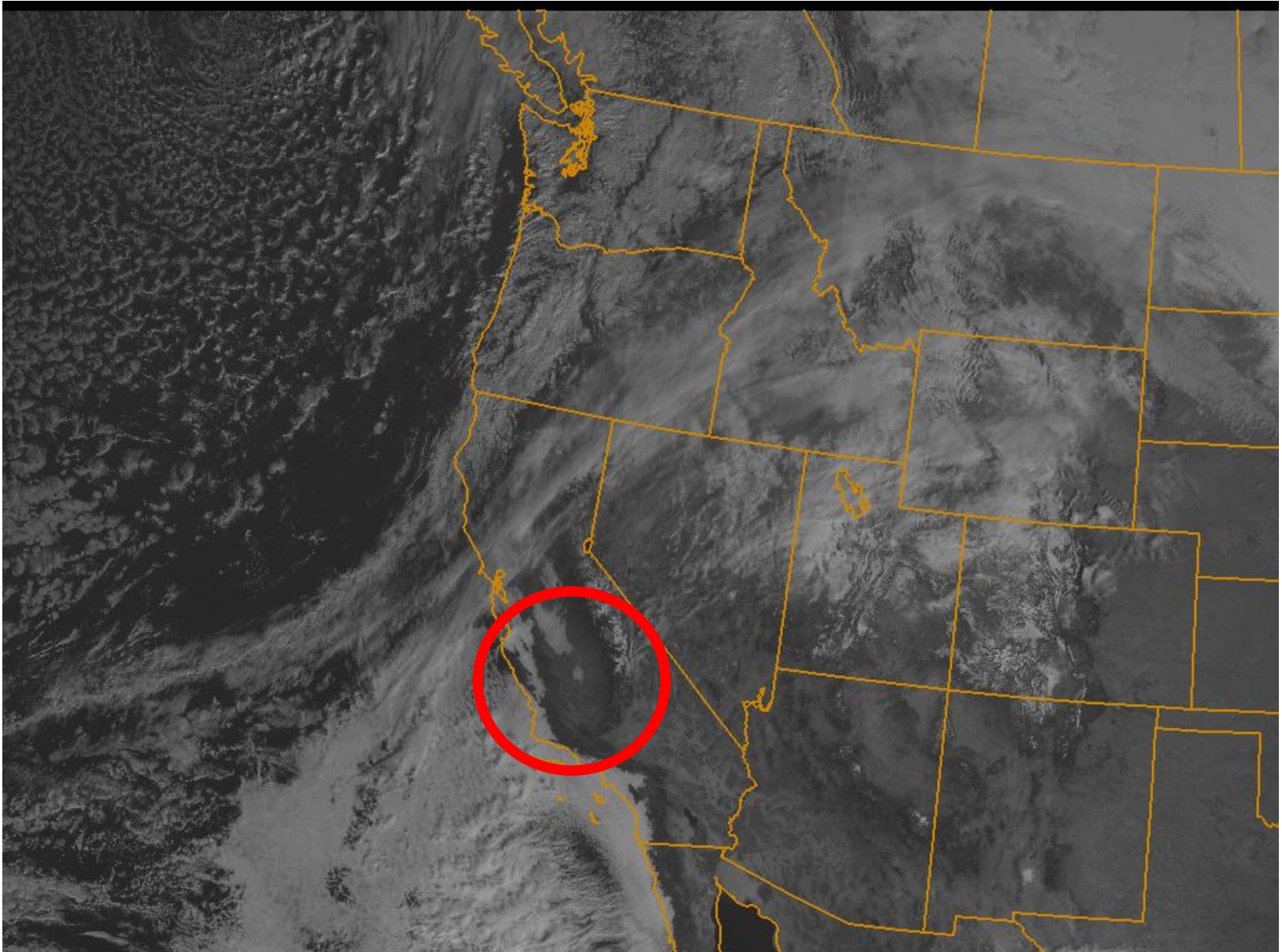
Meteogram for KFAT from 1600Z 4 FEB 13 to 1600Z 5 FEB 13



Some Dense Fog: $< \frac{1}{4}$ mile visibilities

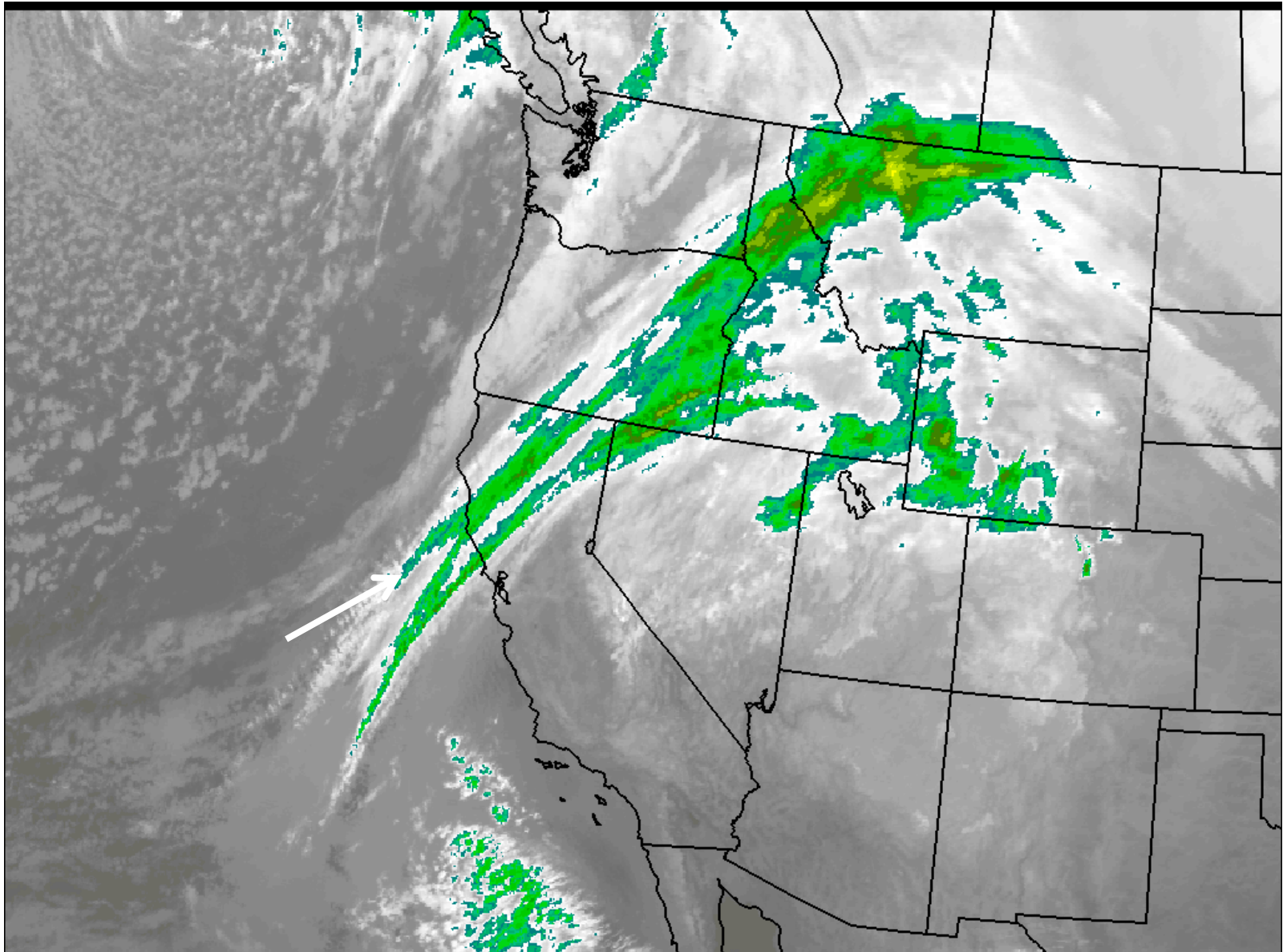


GOES Visible at 1730 (9:30 am)



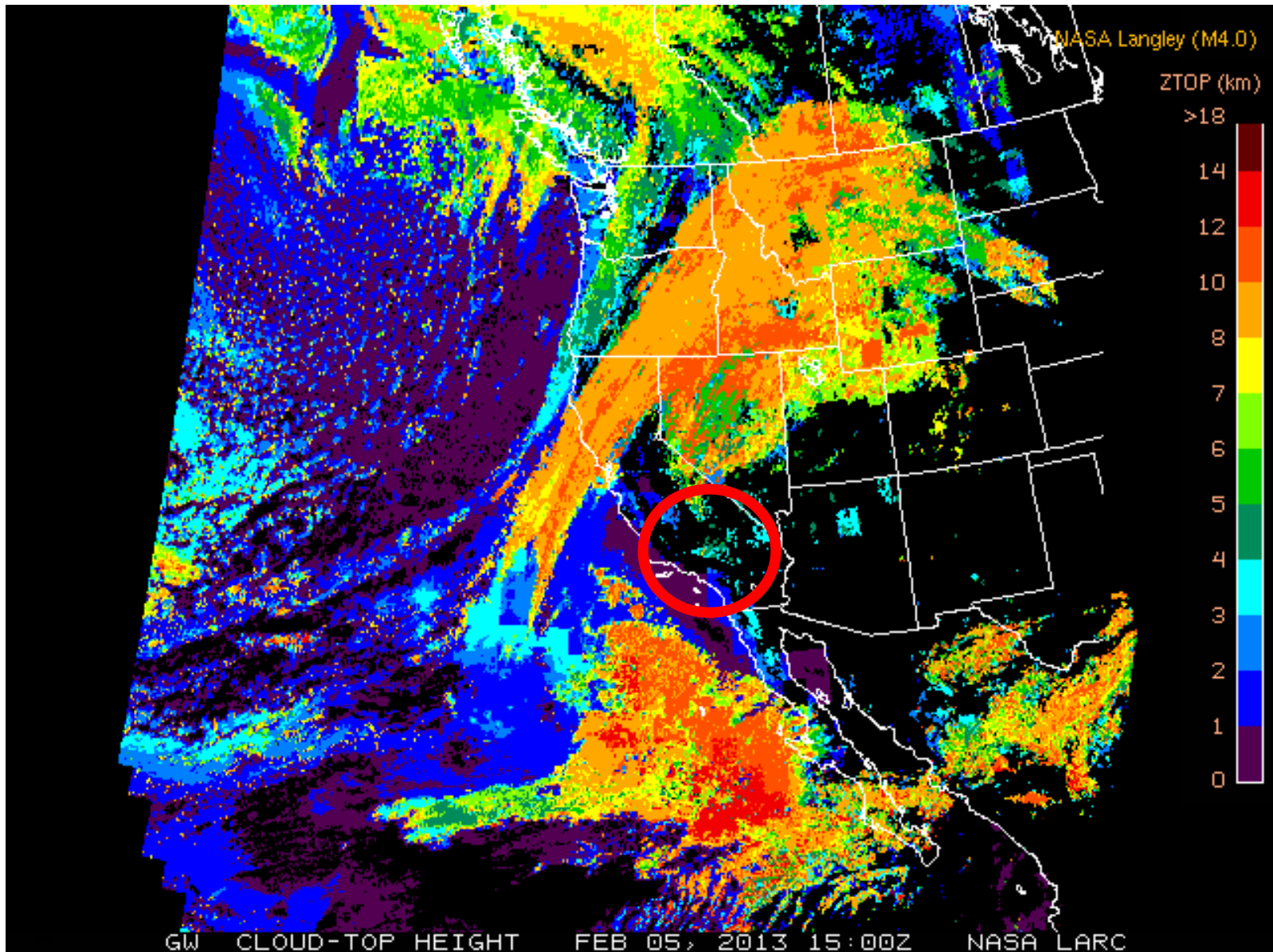
130205/1730 GOES15 VIS

GOES: IR at 1500 UTC (7 am) Today

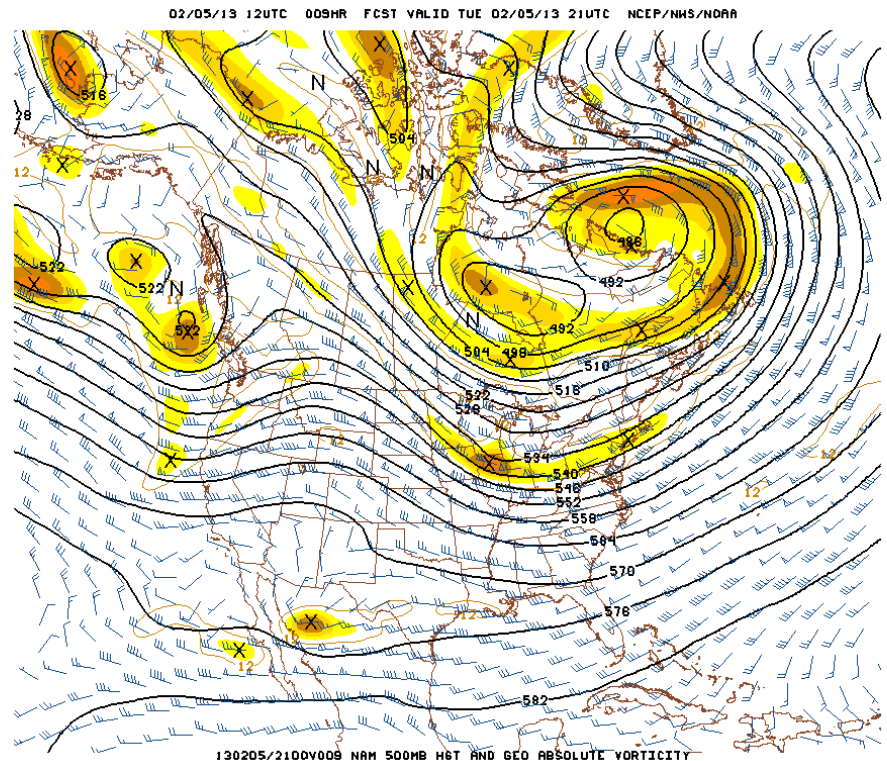
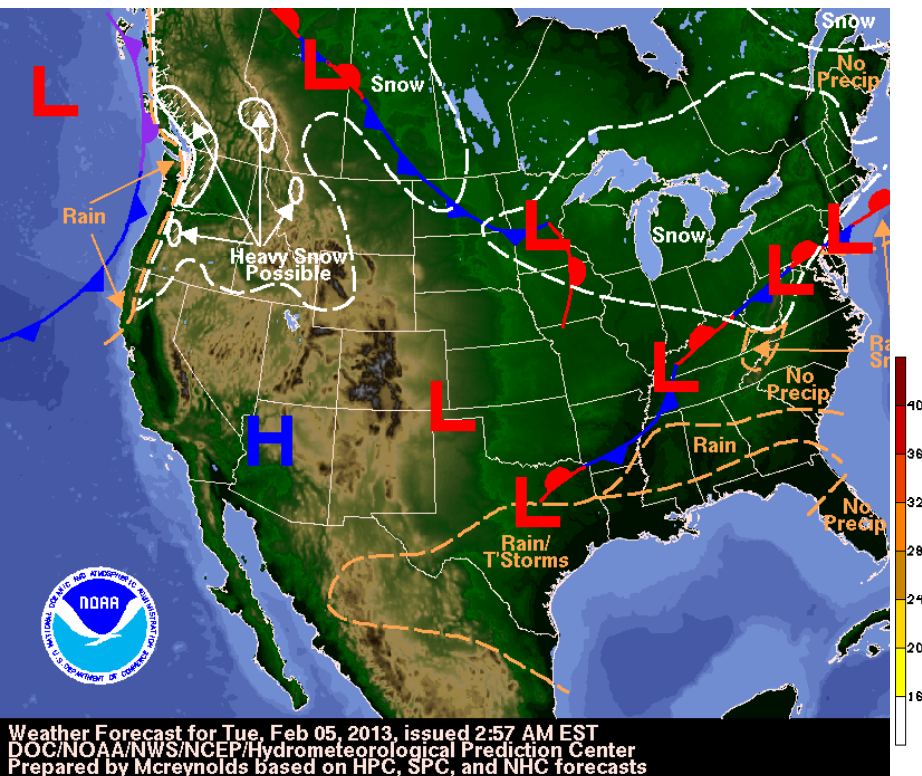


130205/1500 GOES15 IR4

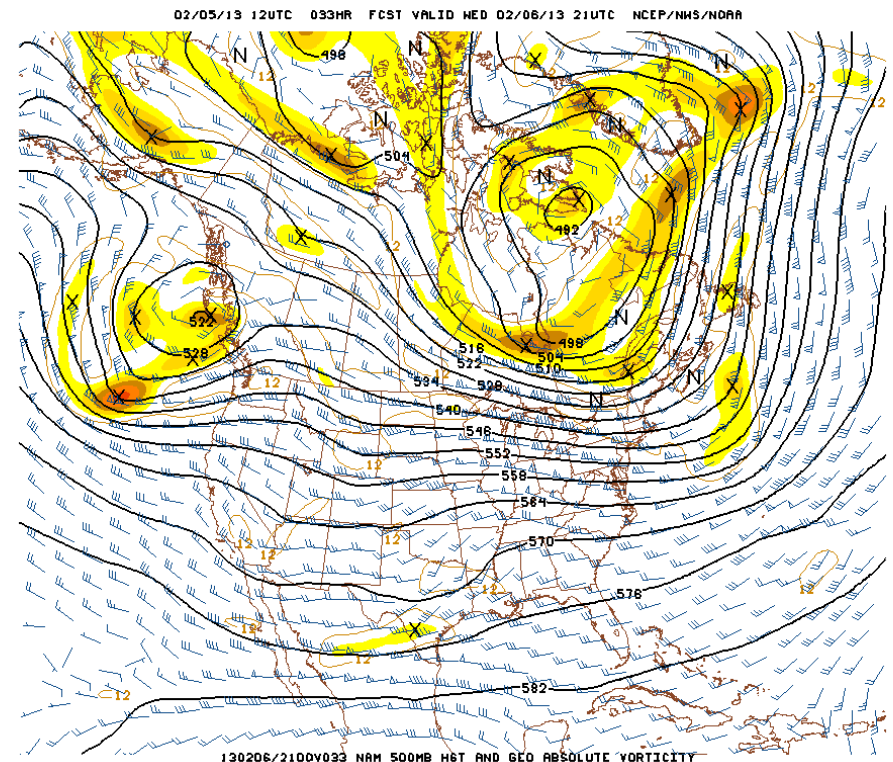
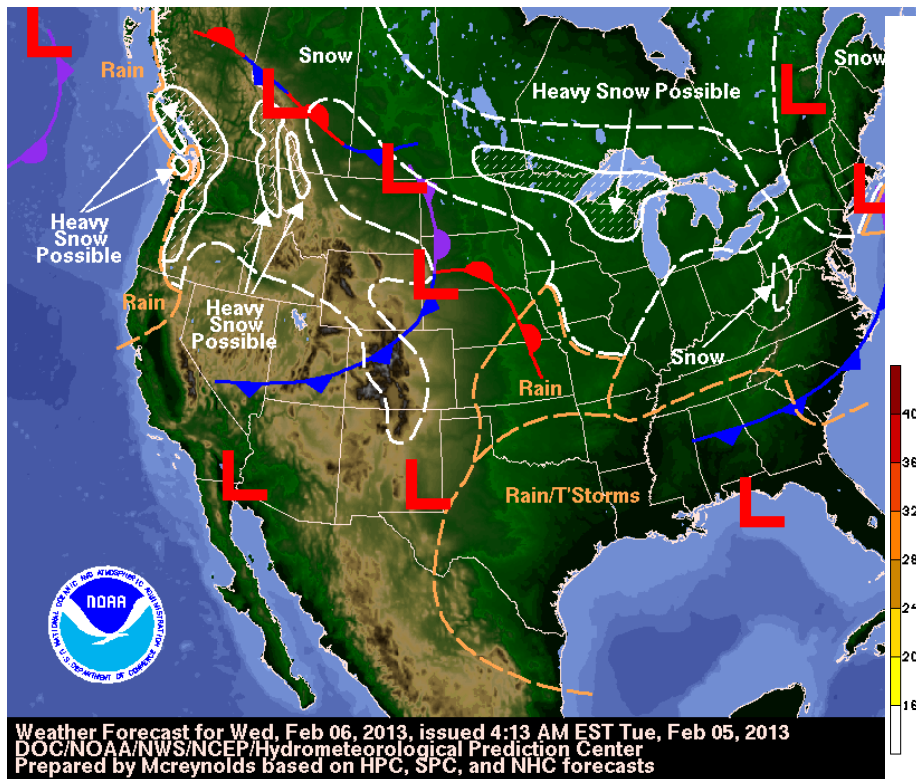
GOES: Cloud Top Height at 1500 UTC (7:00 am) Today



Today: Central CA remains under the main influence of an upper ridge. However, a weak shortwave trough will move through the area today and overnight. Dry and warm.

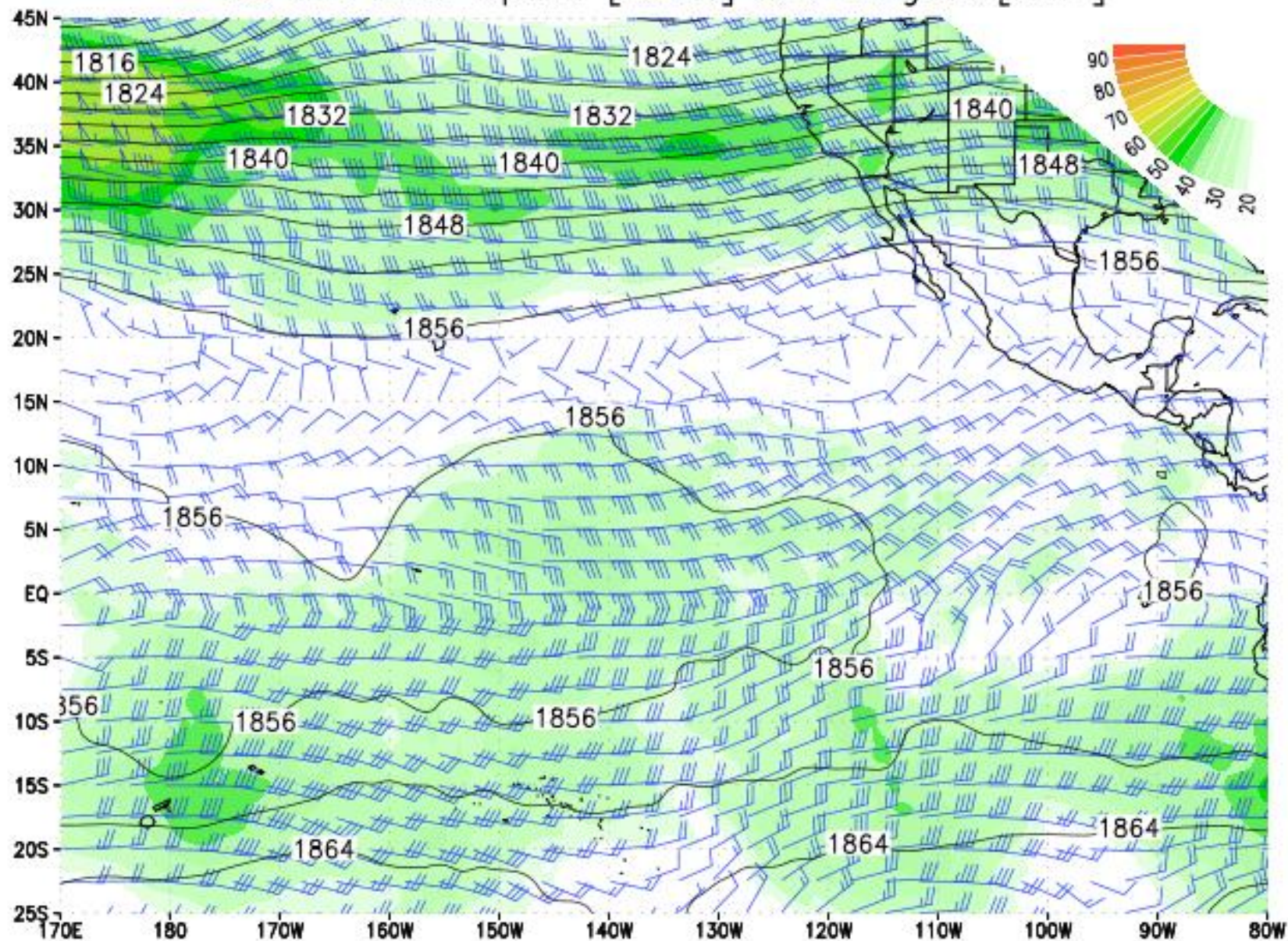


Tomorrow (Wednesday): A weak ridge again builds in the area and dominates during the day. Dry and sunny. Another upper trough off the Pacific Northwest coast will move east; winds may briefly increase Tuesday night into early Wednesday morning.



NASA/GMAO - GEOS-5 Forecast Initialized on 00z 2013-02-05

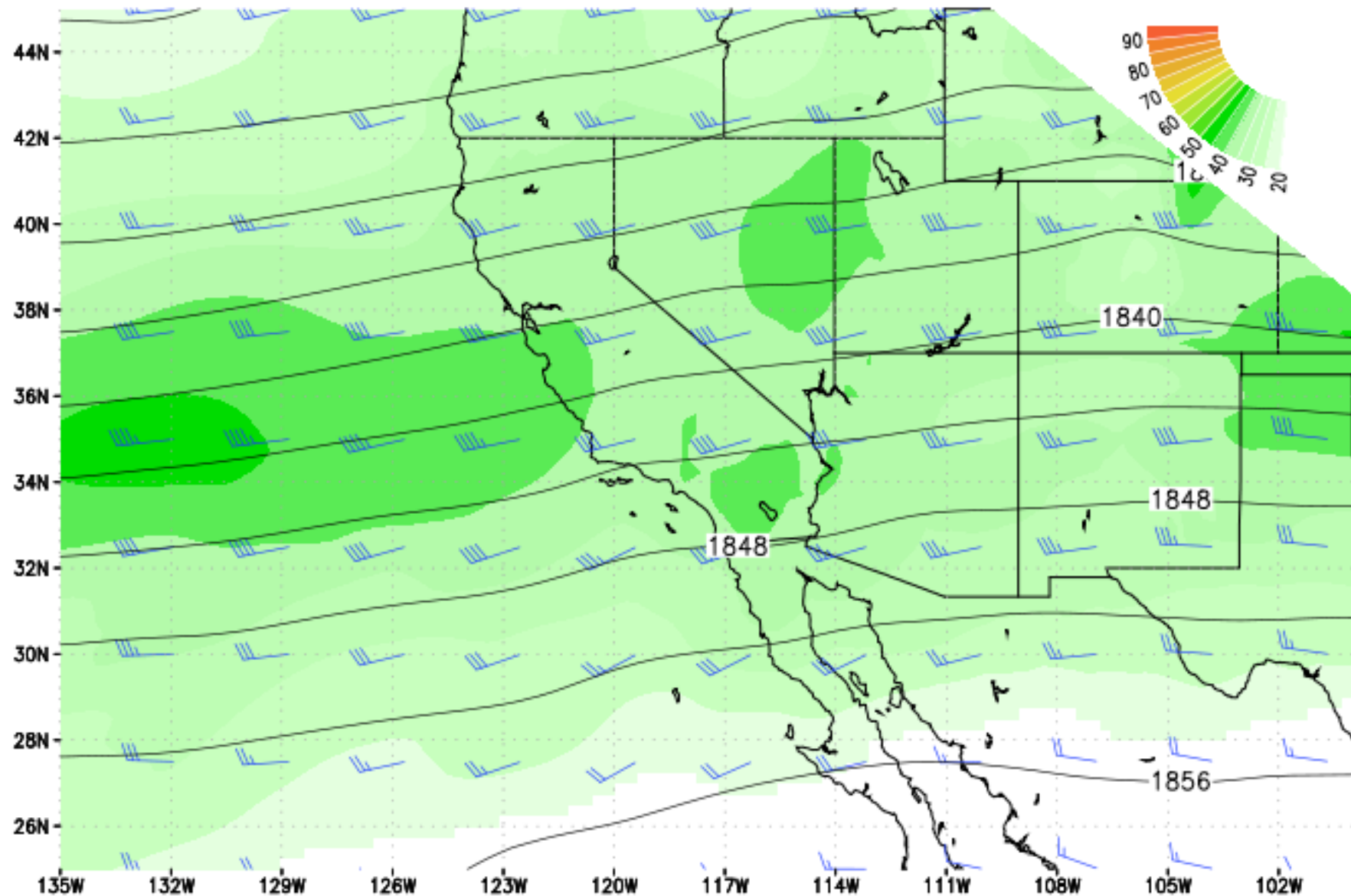
70 hPa Wind Speed [knots] and Heights [dam]



42 hr forecast valid Wed 18z 2013-02-06

NASA/GMAO - GEOS-5 Forecast Initialized on 00z 2013-02-05

70 hPa Wind Speed [knots] and Heights [dam]



42 hr forecast valid Wed 18z 2013-02-06

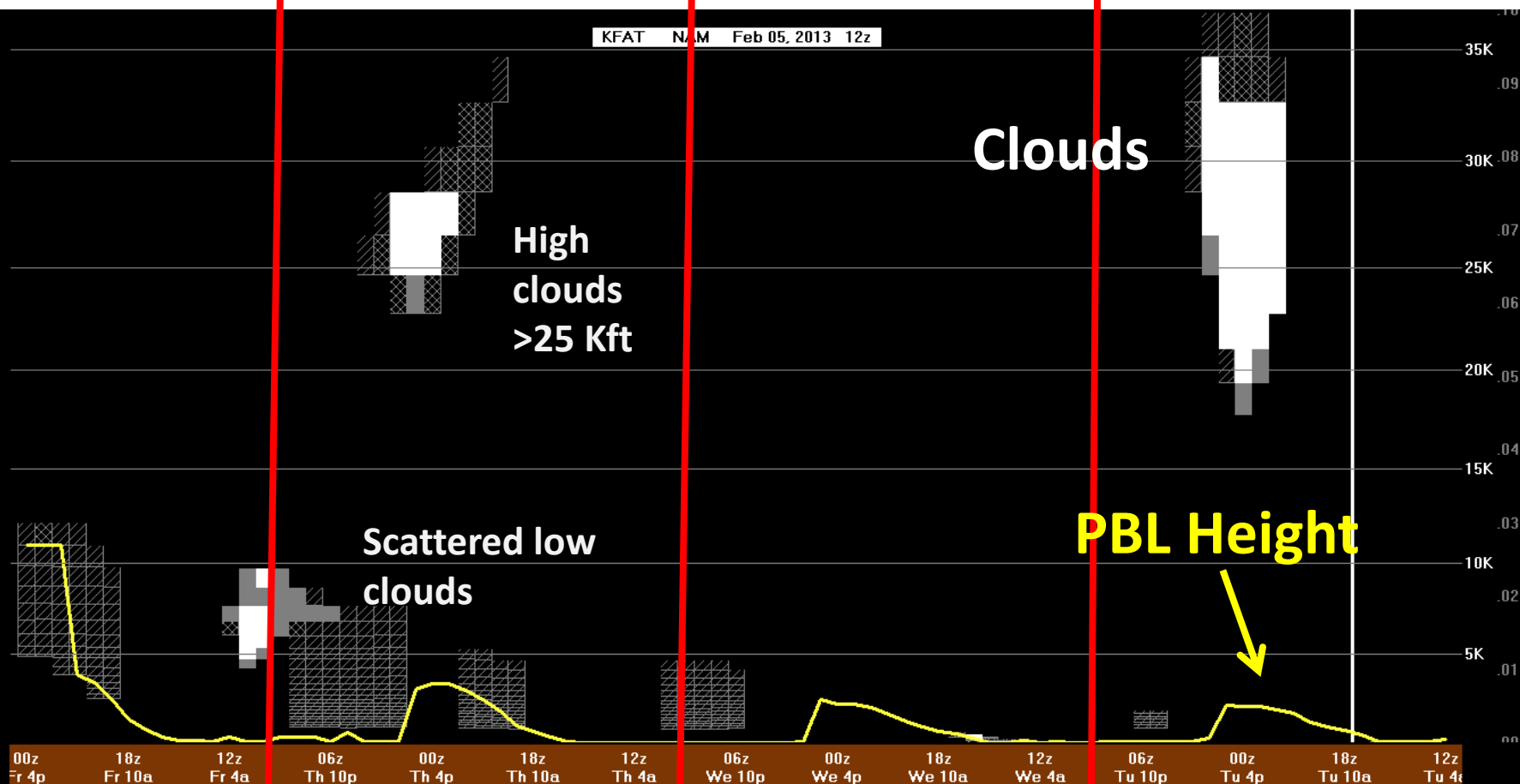
Fresno : BUFKIT NAM 12 UTC Tuesday Feb. 5th

Friday

Thursday

Wednesday

Today



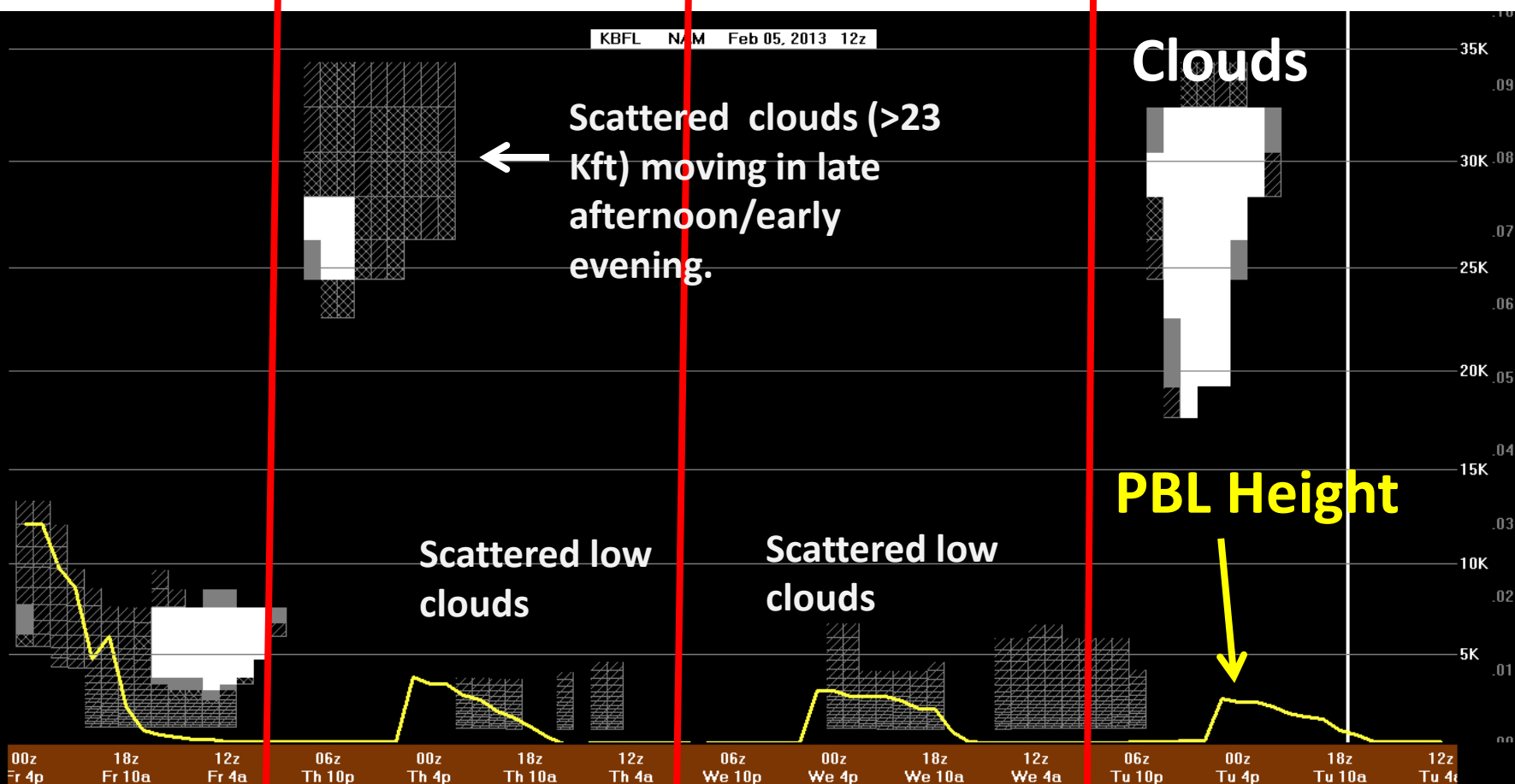
Bakersfield : BUFKIT NAM 12 UTC Tuesday Feb. 5th

Friday

Thursday

Wednesday

Today



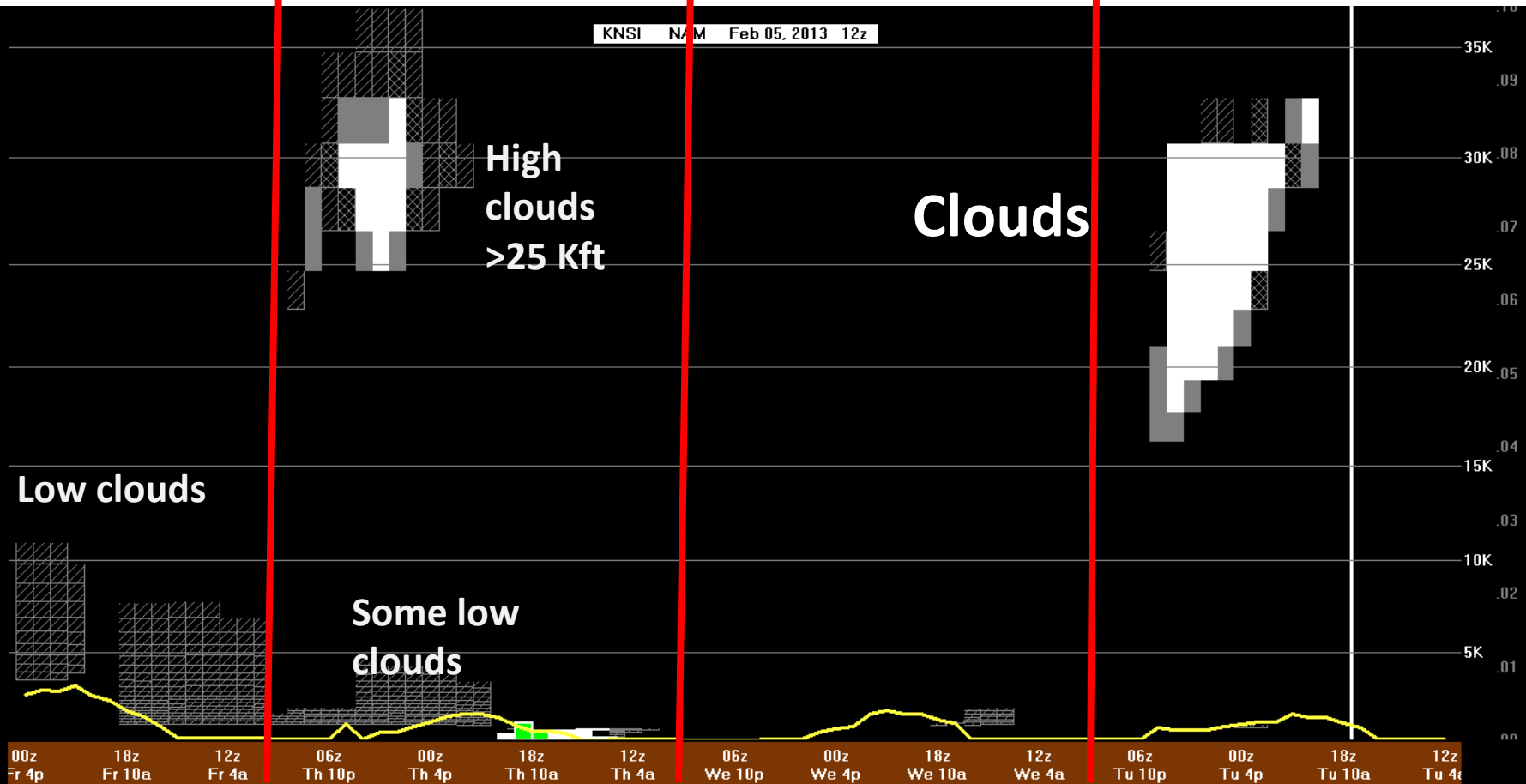
San Nicolas : BUFKIT NAM 12 UTC Tuesday Feb. 5th

Friday

Thursday

Wednesday

Today



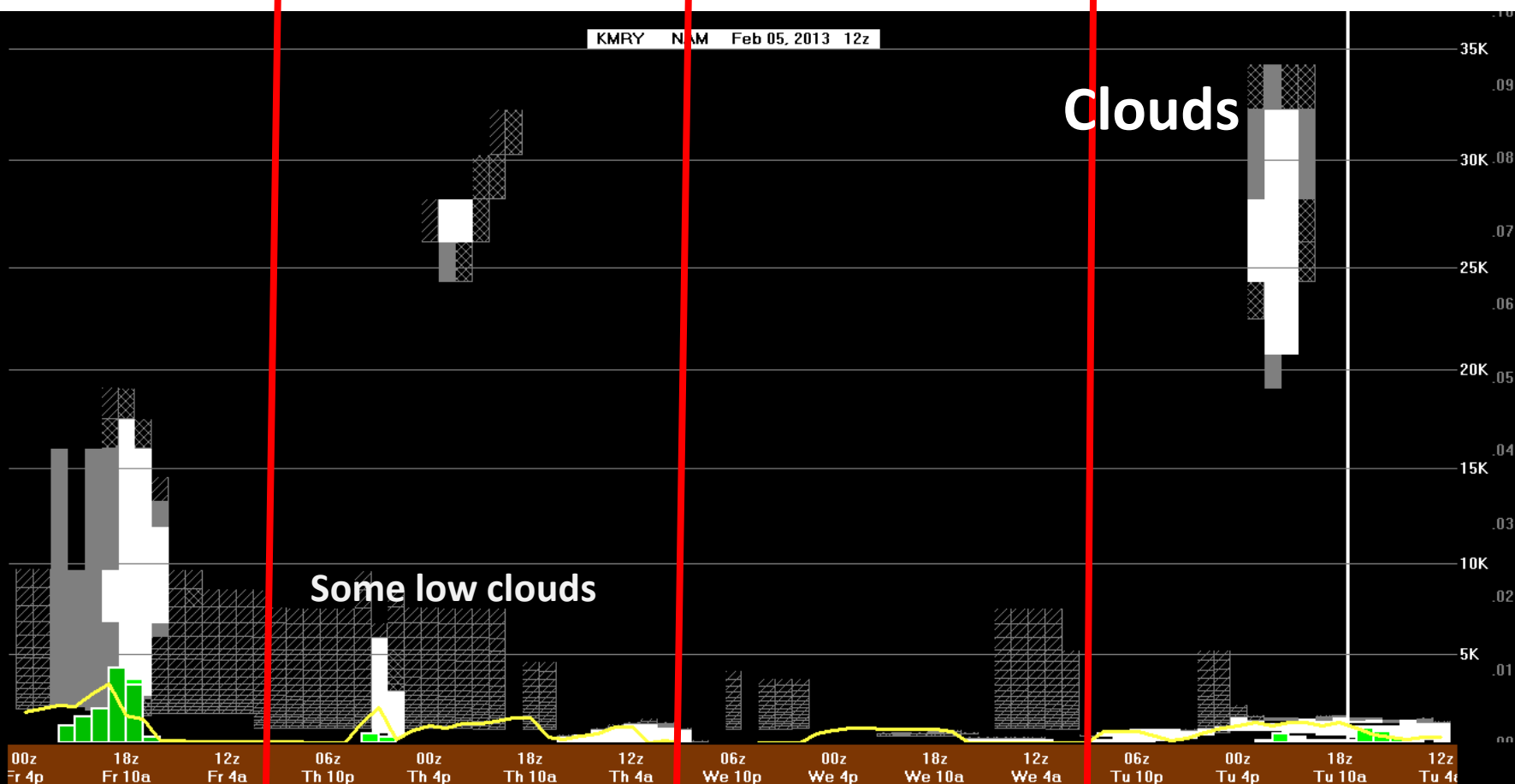
Monterey : BUFKIT NAM 12 UTC Tuesday Feb. 5th

Friday

Thursday

Wednesday

Today



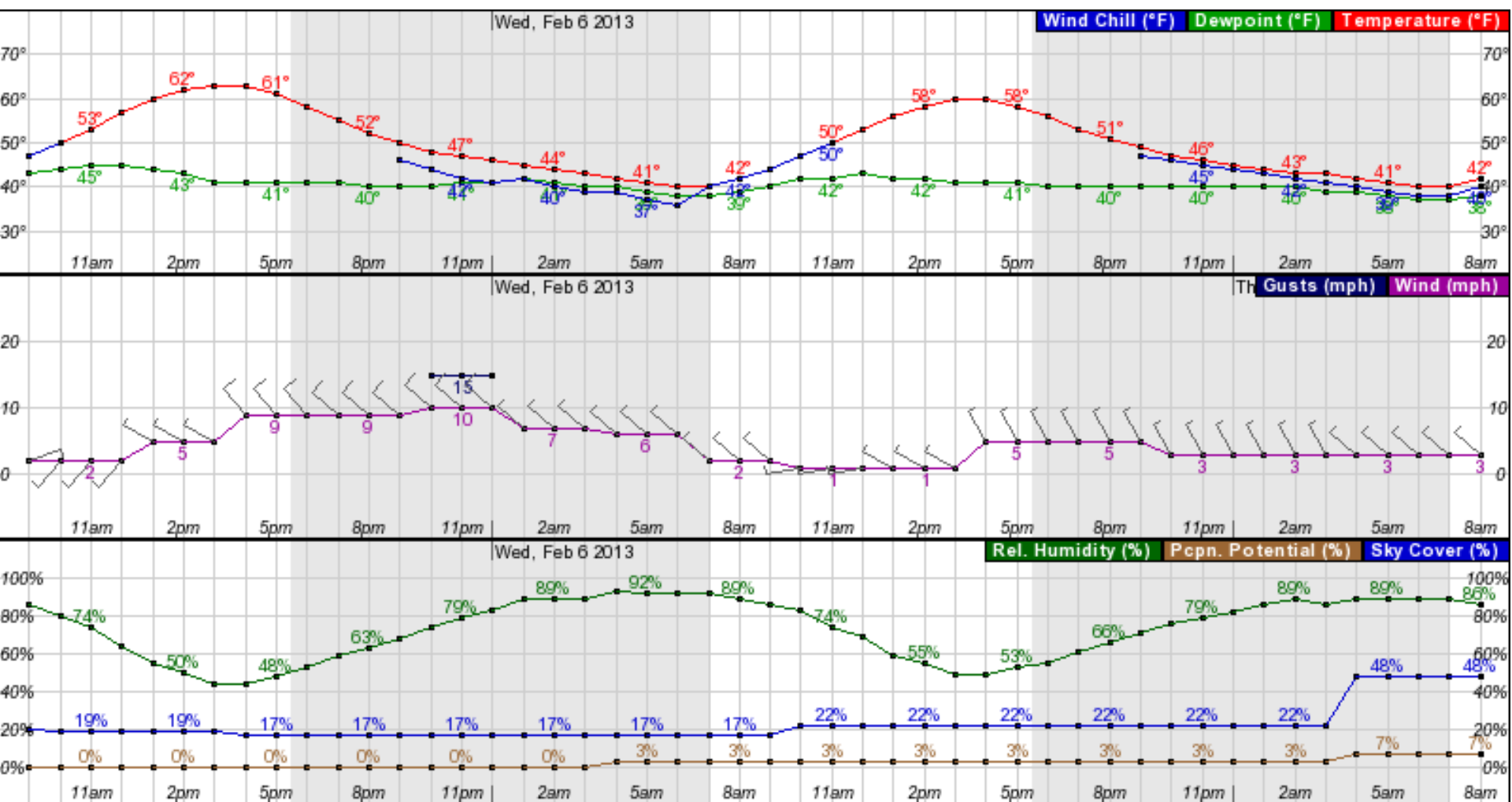
Fresno

Today: Sunny

Wednesday: Somewhat increased cloud cover, but mainly sunny

Today →

Wednesday →



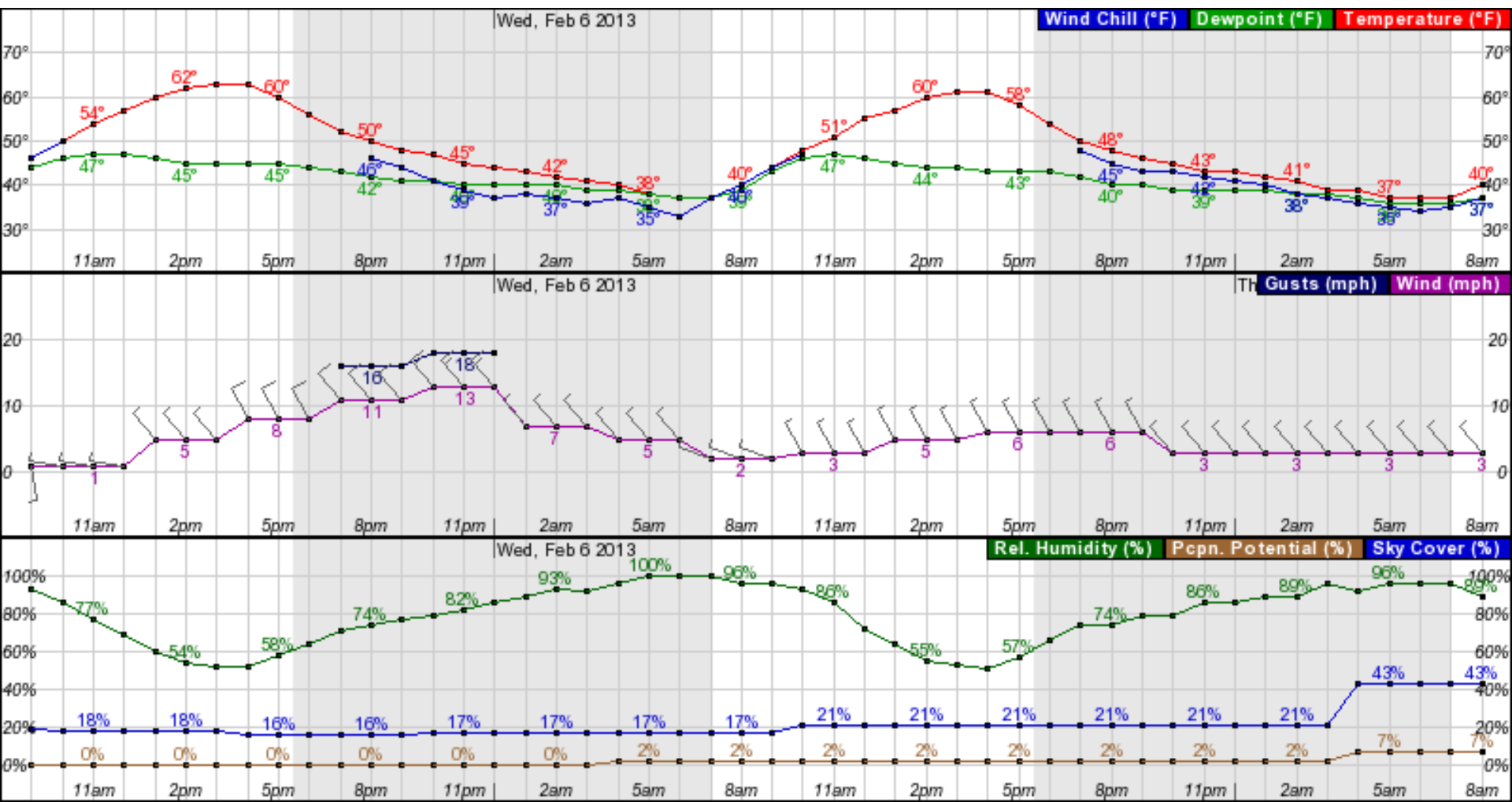
Hanford

Today: Sunny

Wednesday: Somewhat increased cloud cover, but mainly sunny

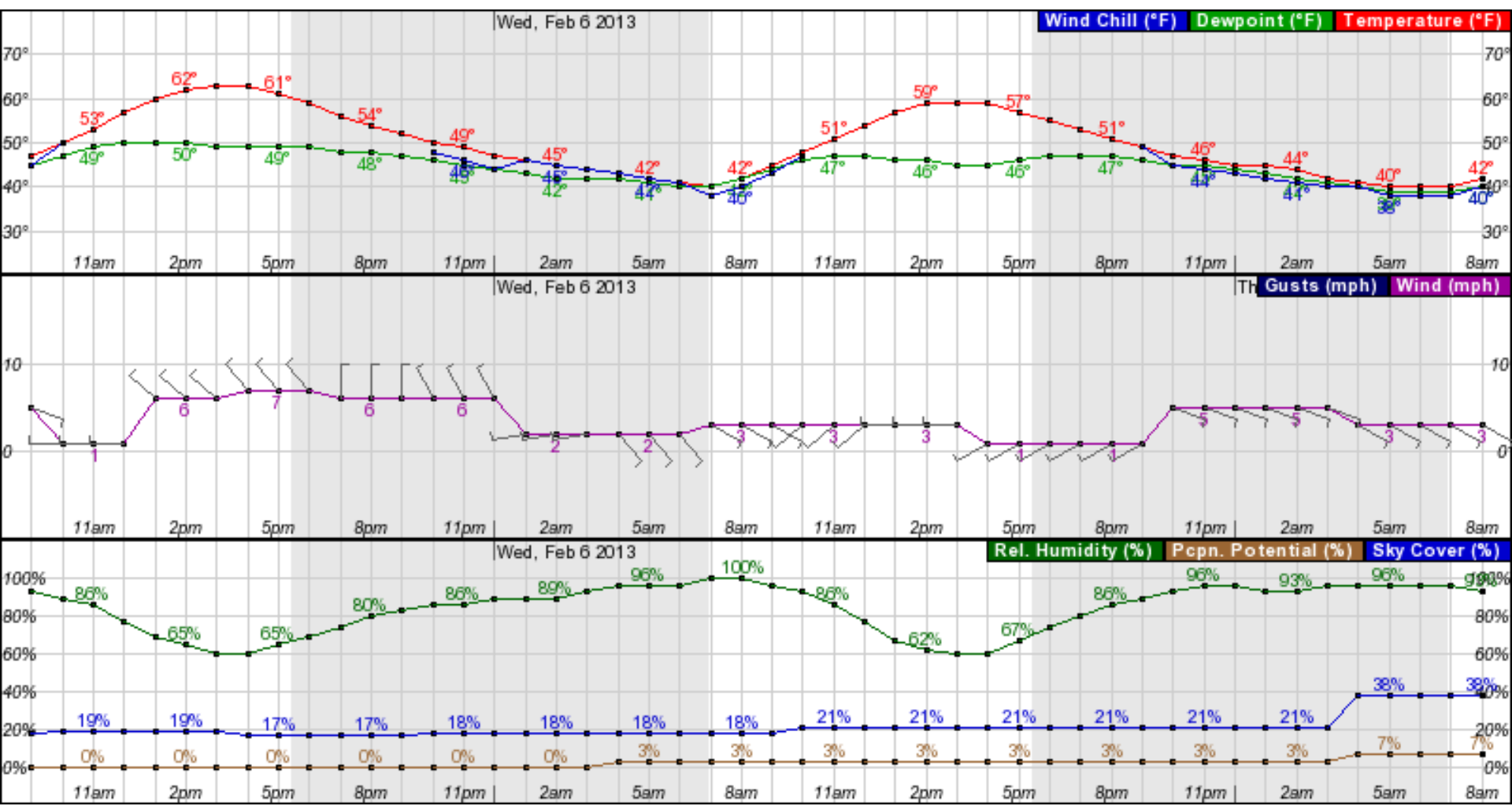
Today →

Wednesday →

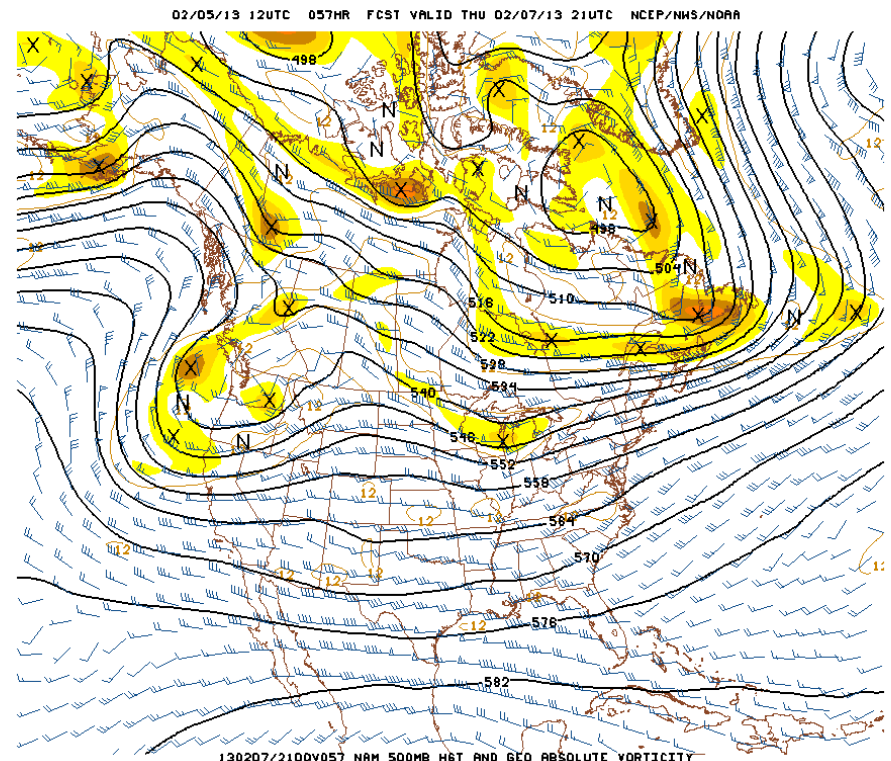
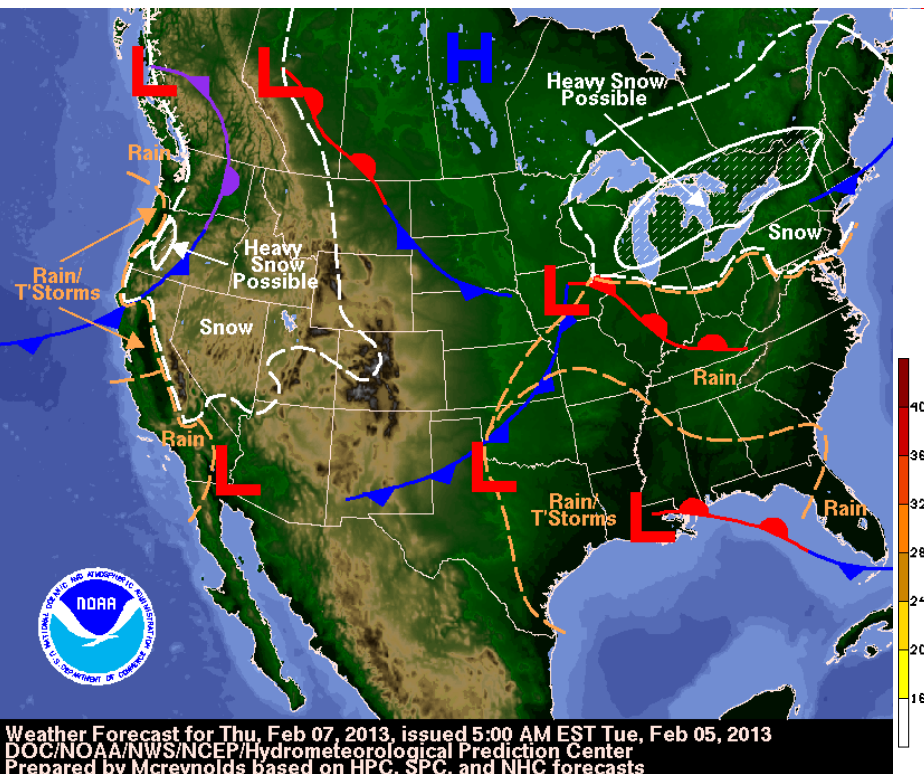


Bakersfield
Today: Sunny
Wednesday: Mainly sunny

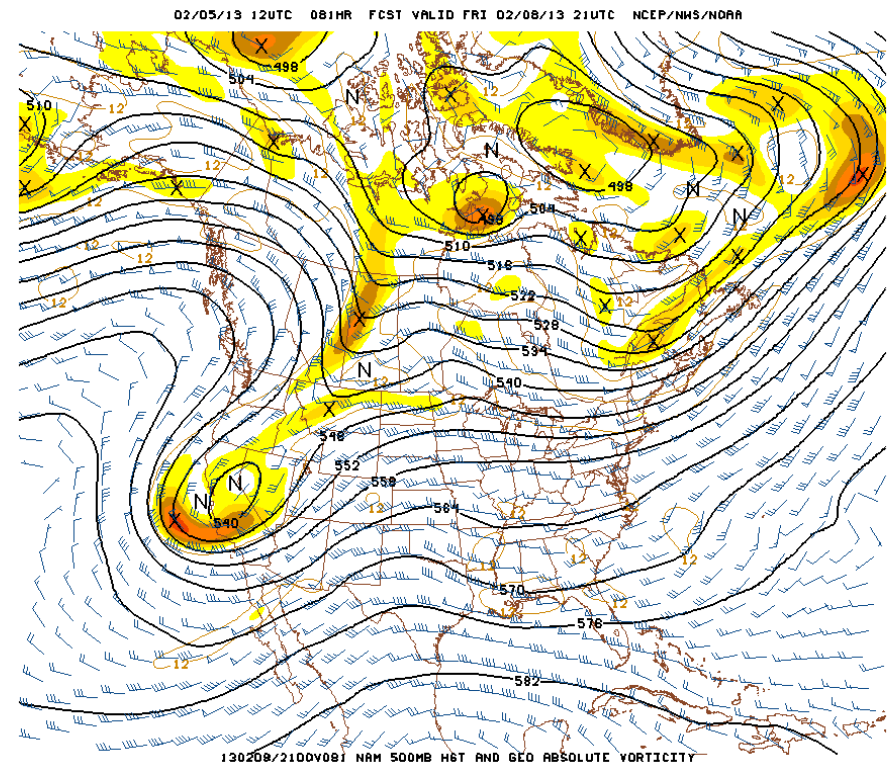
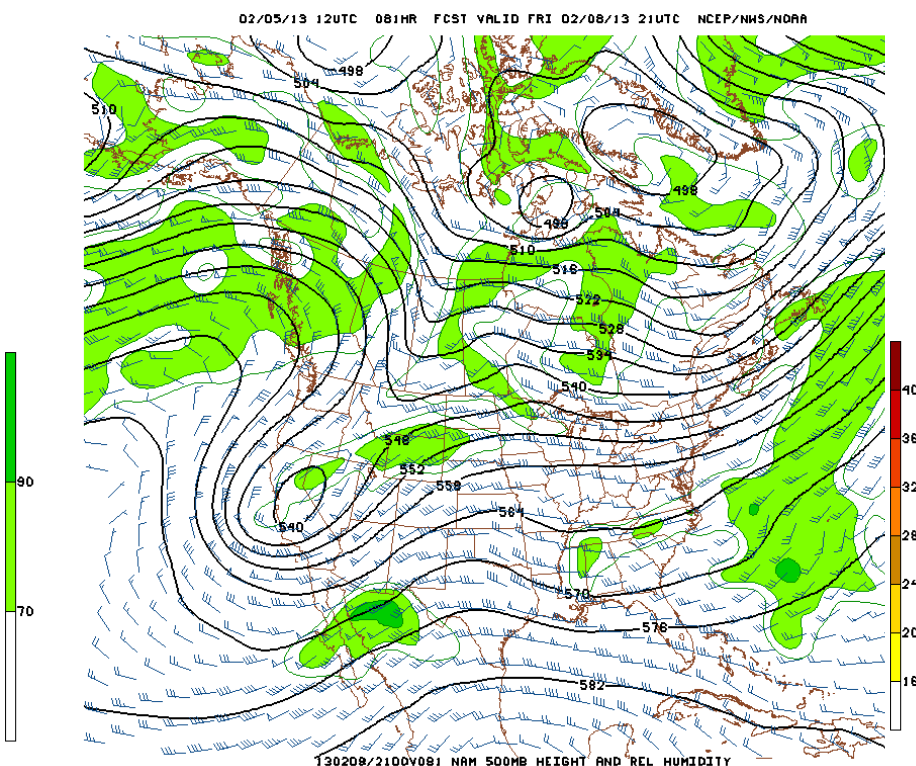
Today → Wednesday →



Thursday: A stronger and colder upper trough will begin to move into central CA by Thursday night. Cloud cover and winds will again increase.



Friday: The trough intensifies to a closed low. Friday has the highest probability of precipitation (rain) in the valley given the position of the low center. Very cold but not much deep moisture—any snowfall constrained to higher elevations.

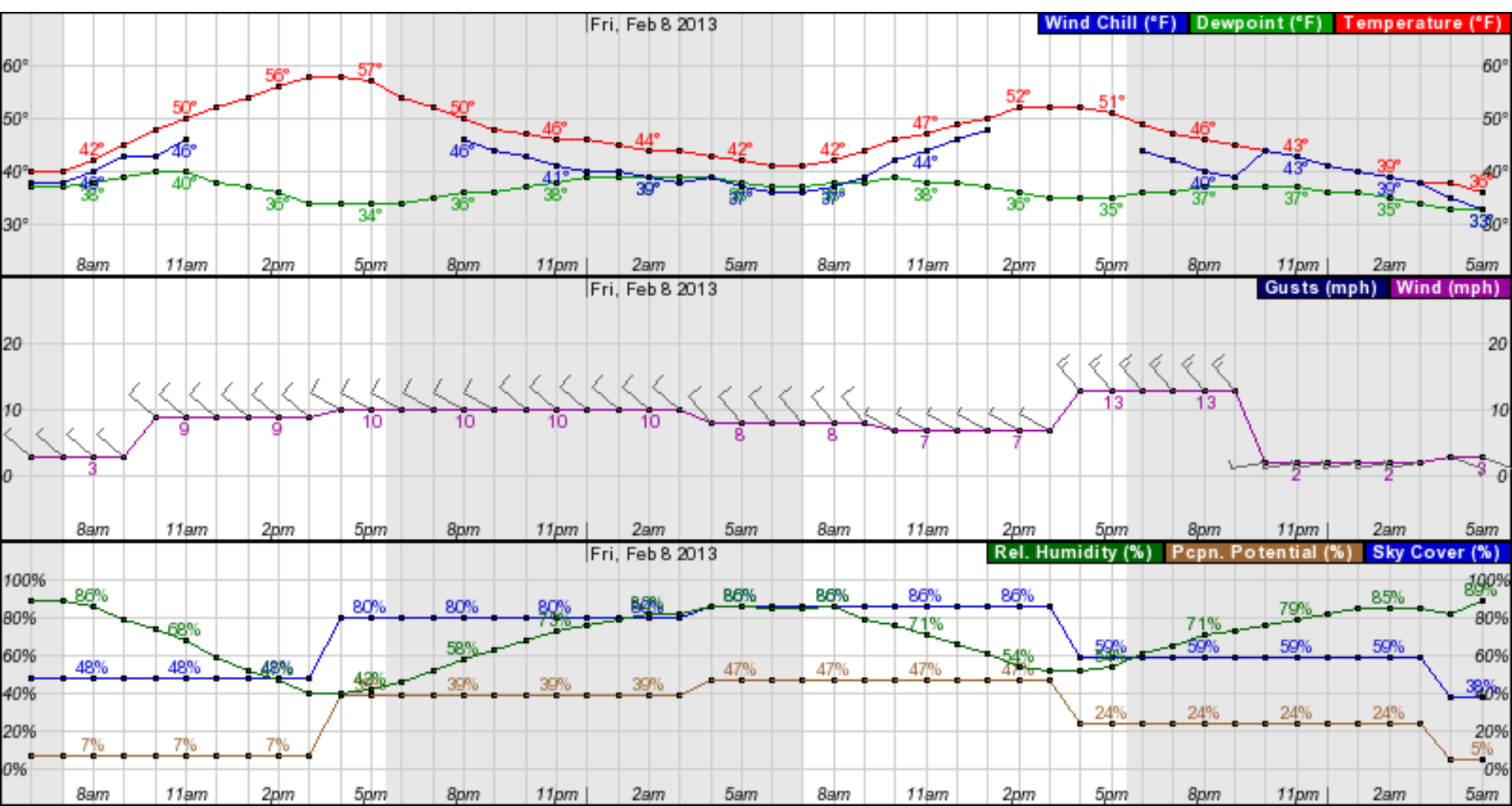


Fresno

Thursday: Cloud cover ~50%

Friday: Cloud cover ~85%

Thursday → Friday →



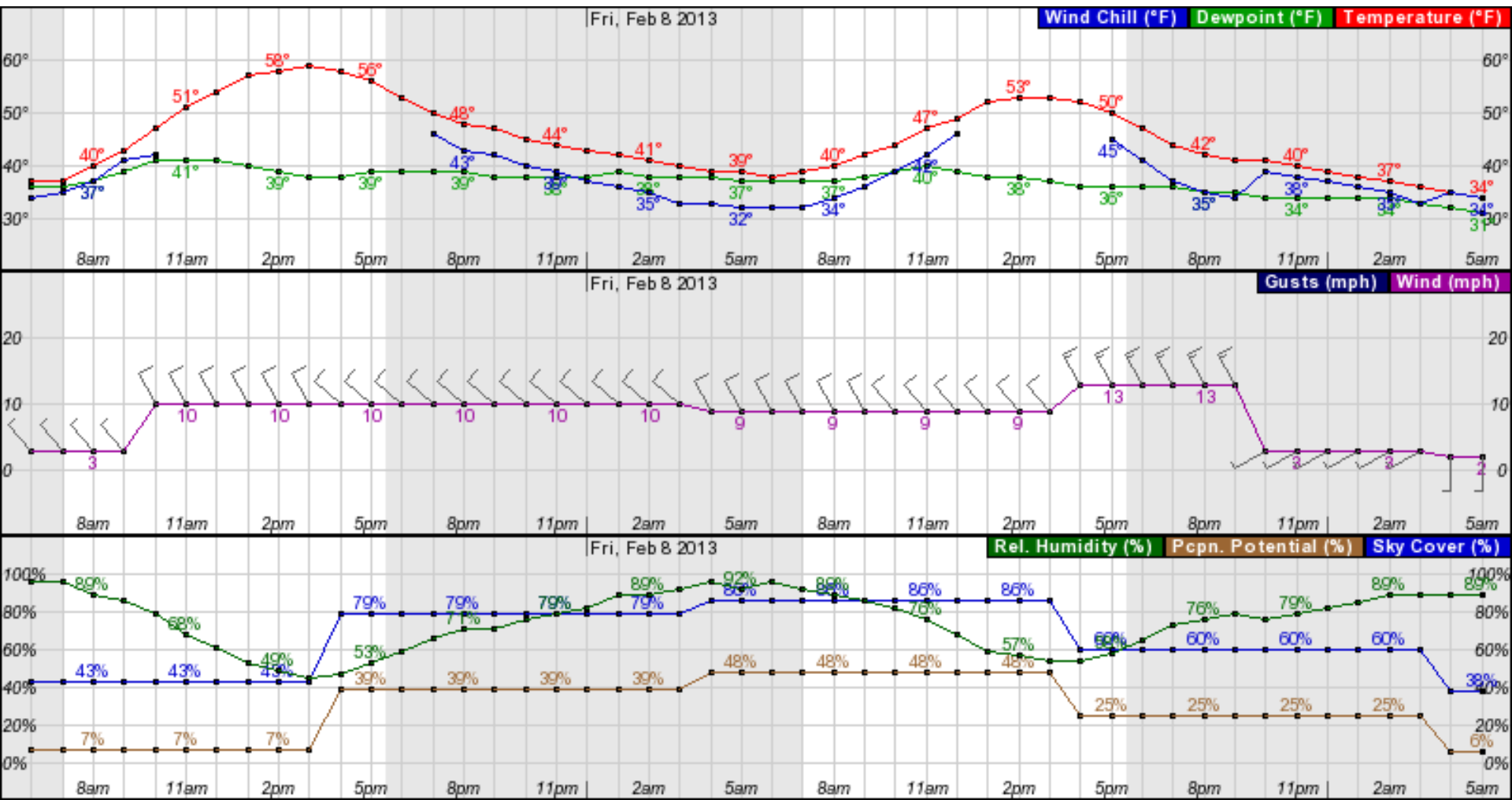
Hanford

Thursday: Cloud cover ~50%

Friday: Cloud cover ~85%

Thursday →

Friday →



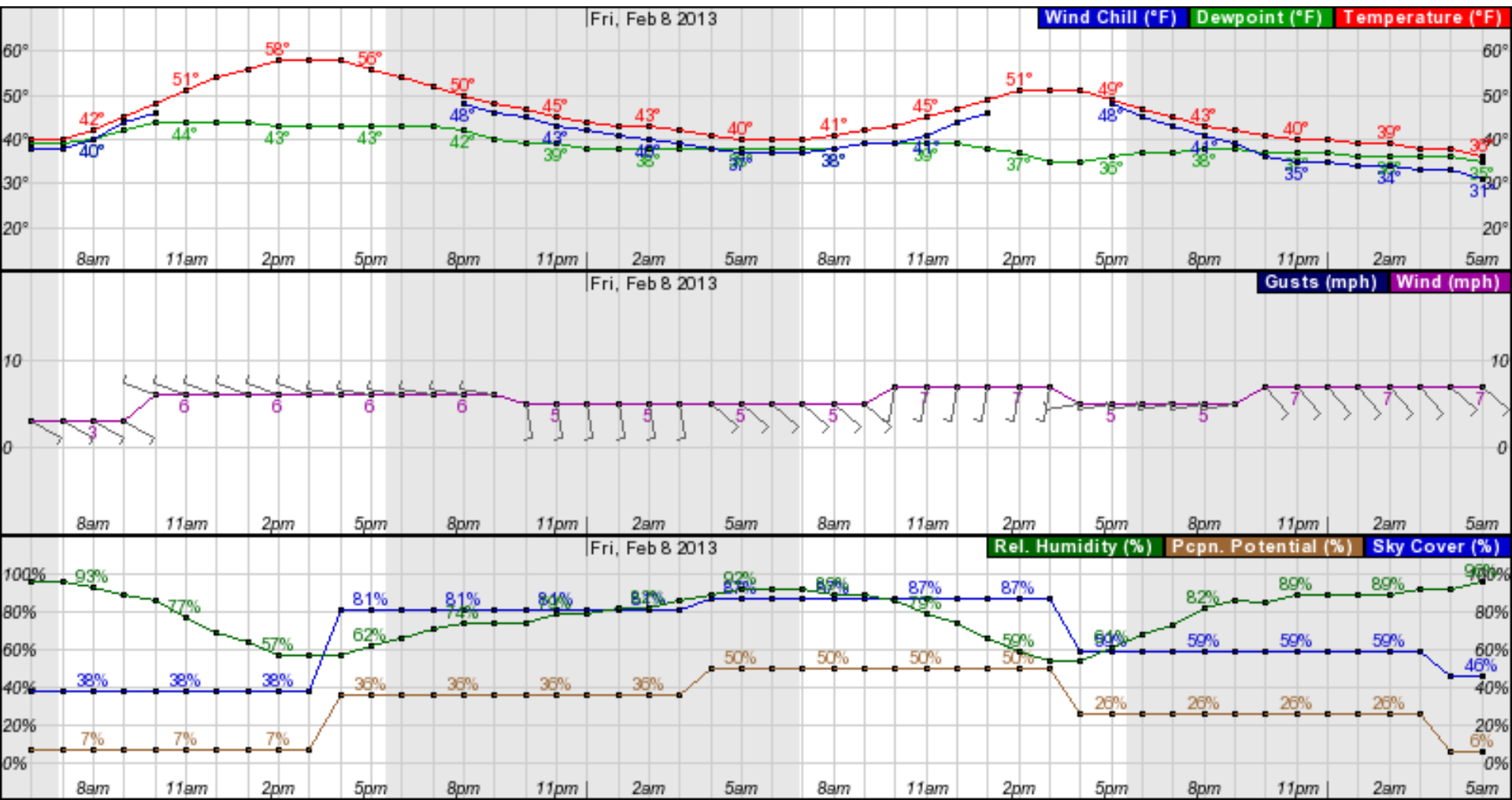
Bakersfield

Thursday: Cloud cover ~40%

Friday: Cloud cover ~90%

Thursday →

Friday →

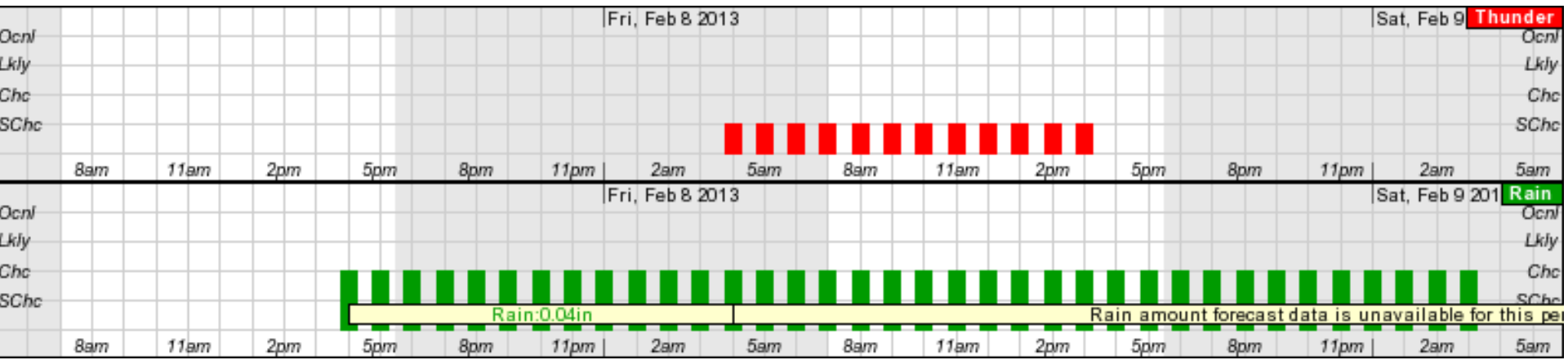


Hanford

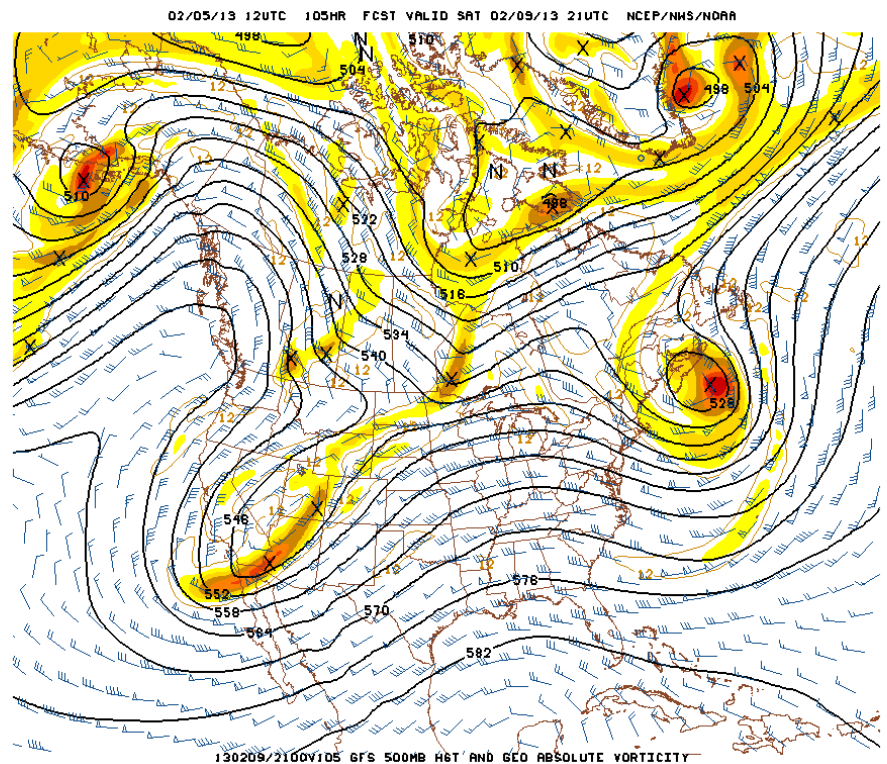
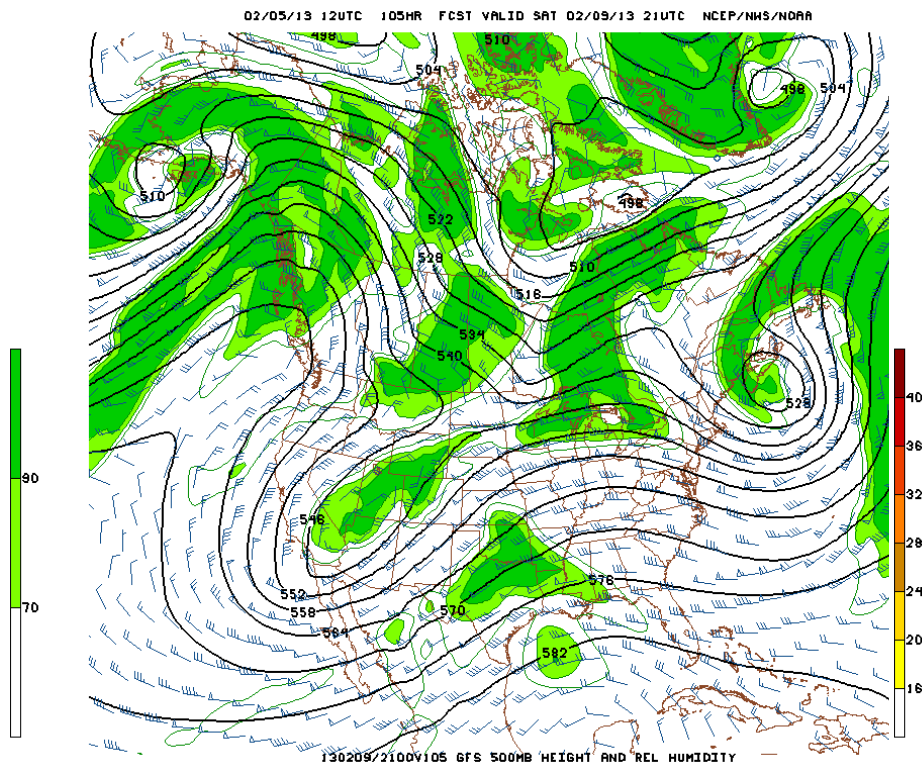
Precipitation and Thunder Forecast

Thursday →

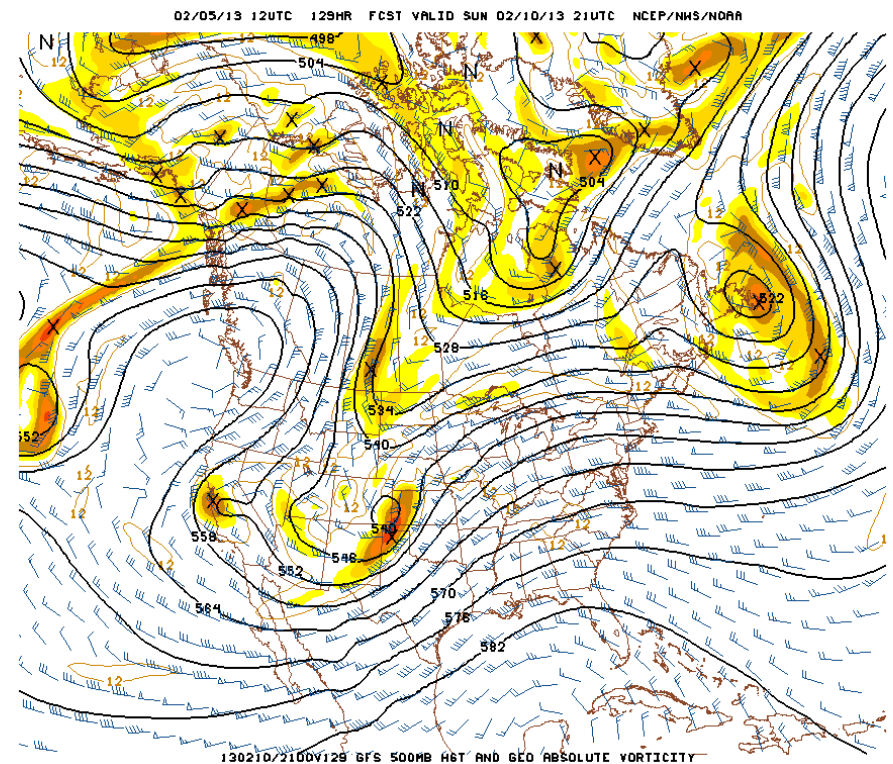
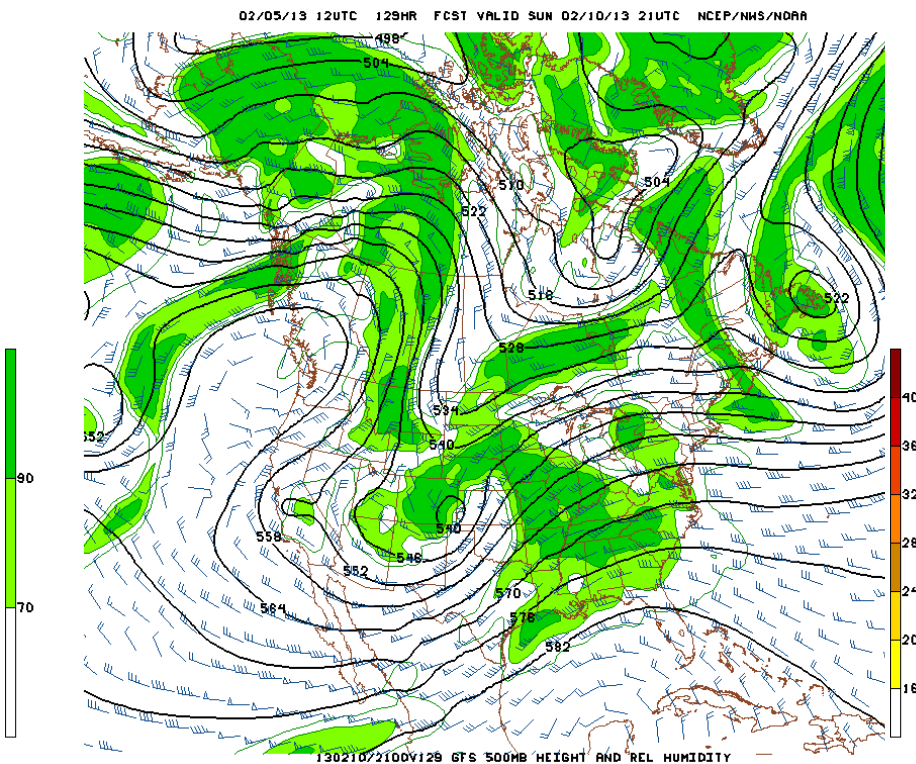
Friday →



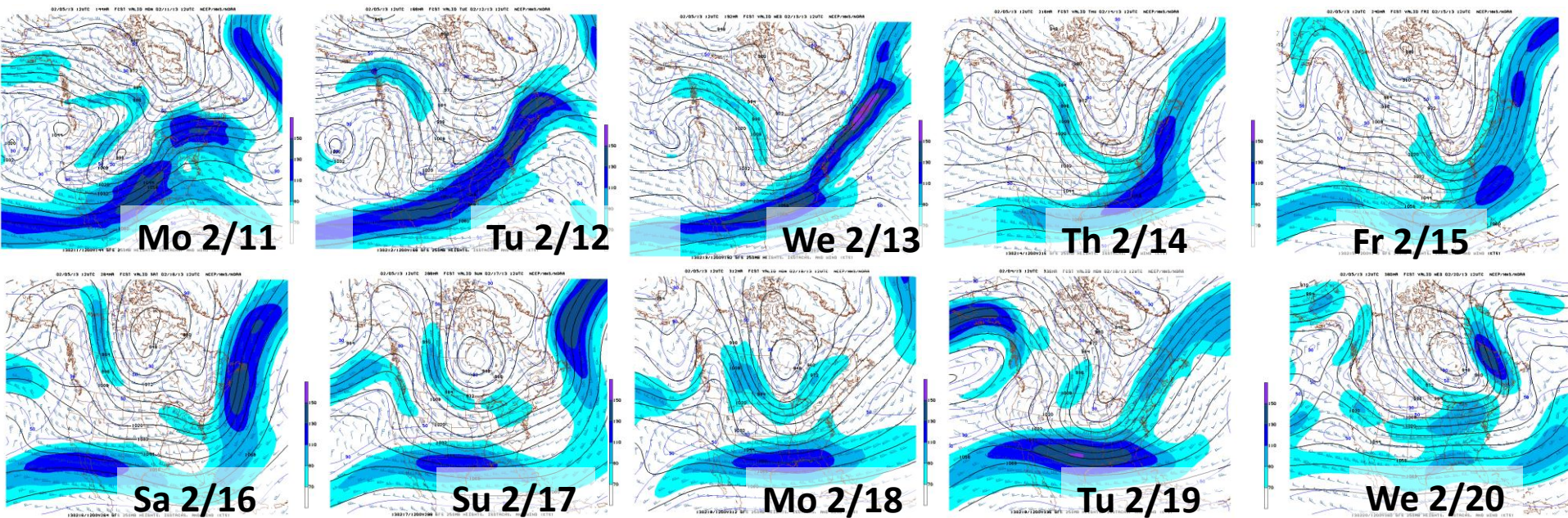
Saturday: The upper trough/close low remains stationary over central CA, keeping clouds and cold air in the area.



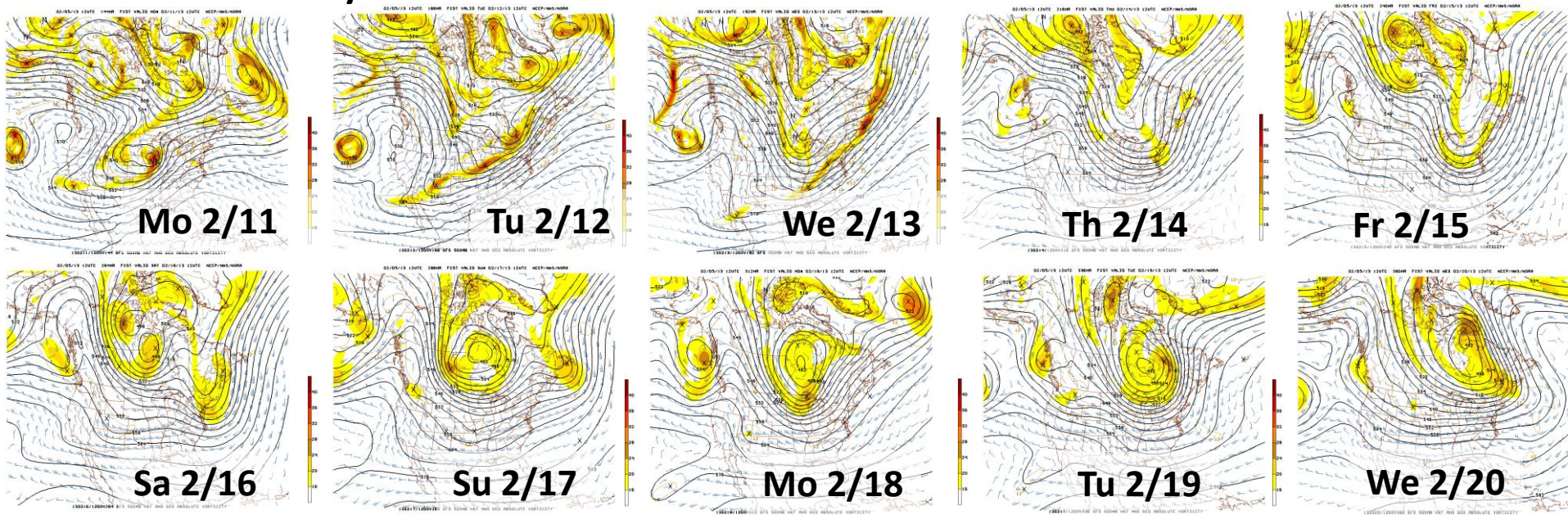
Sunday and beyond: The upper trough remains over central CA on Sunday, but moves east by Monday. Another ridge builds into the area on Monday and dominates the region by Tuesday.



GFS - 250 mb winds - Extended forecast



GFS - 500 mb vorticity - Extended forecast



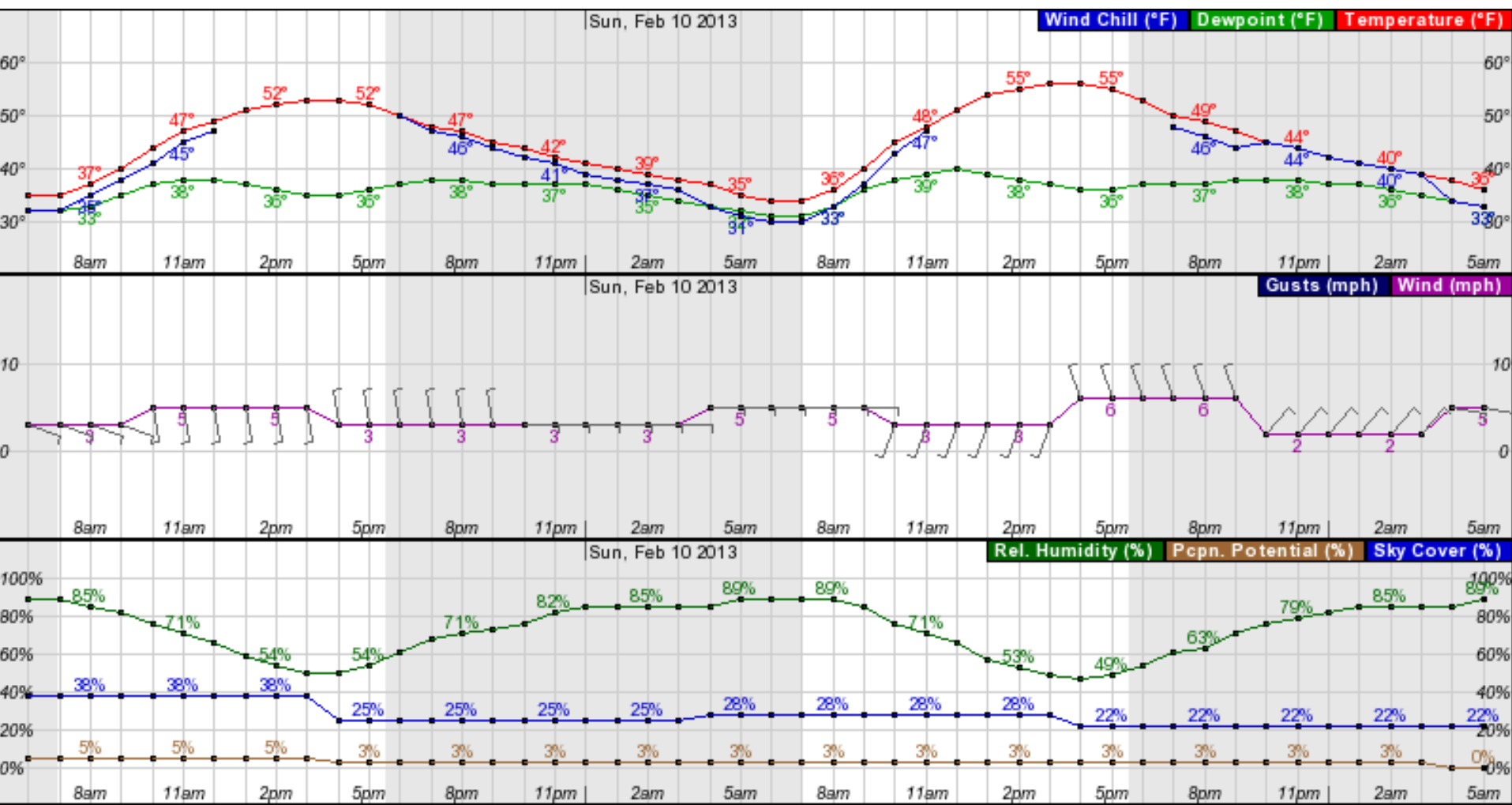
Fresno

Saturday: Decreasing cloud cover ~40%

Sunday: Cloud cover ~30%

Saturday →

Sunday →



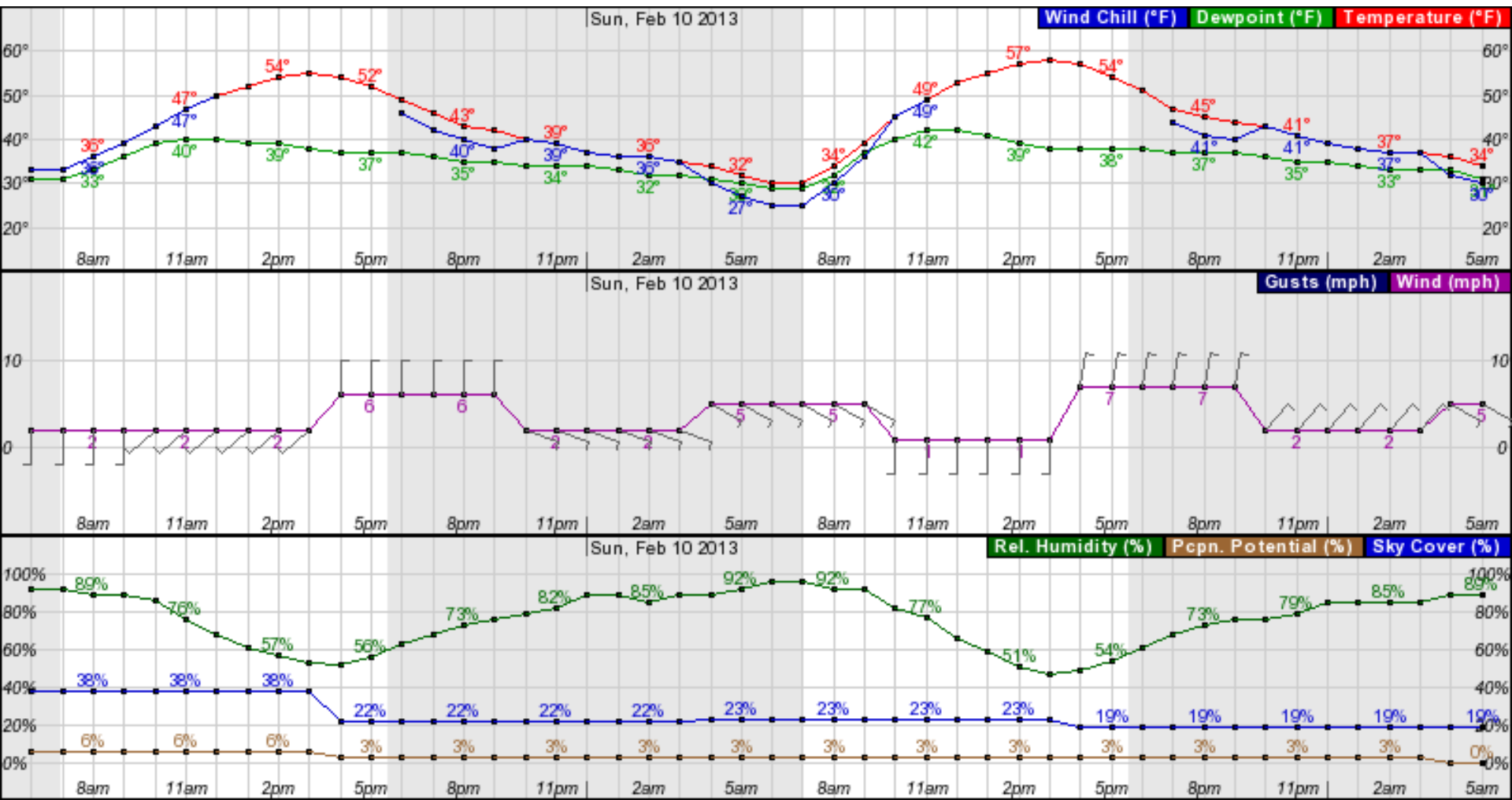
Hanford

Saturday: Decreasing cloud cover ~40%

Sunday: Cloud cover ~20%

Saturday →

Sunday →



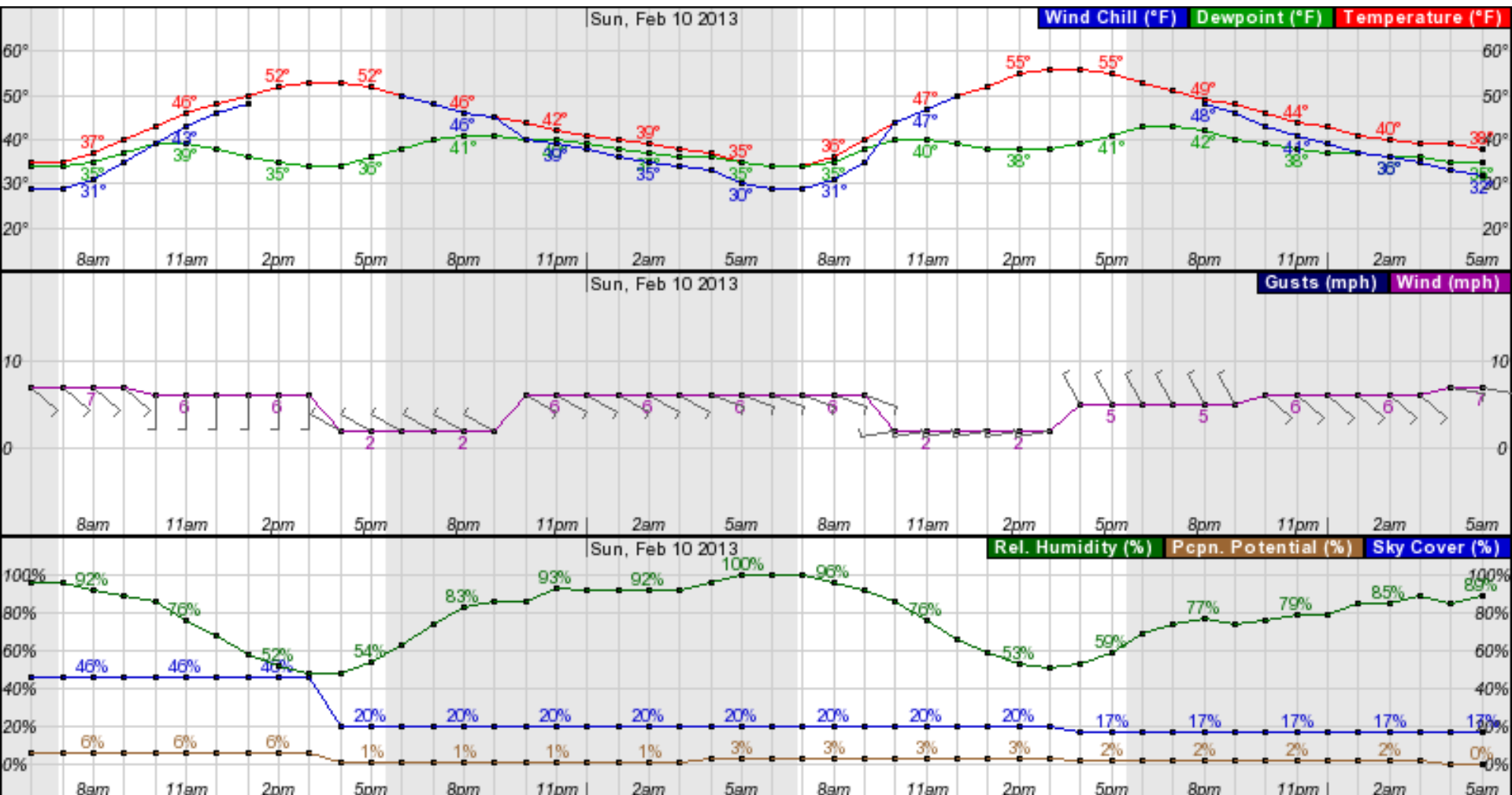
Bakersfield

Saturday: Decreasing cloud cover ~40%

Sunday: Cloud cover ~20%

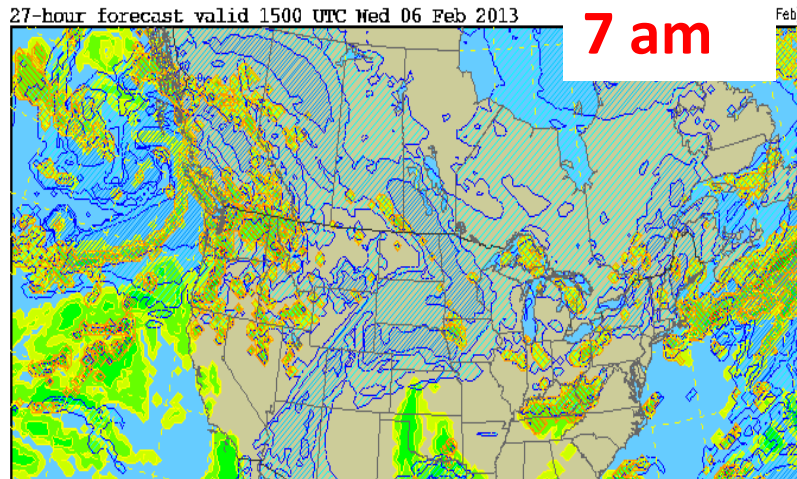
Saturday →

Sunday →

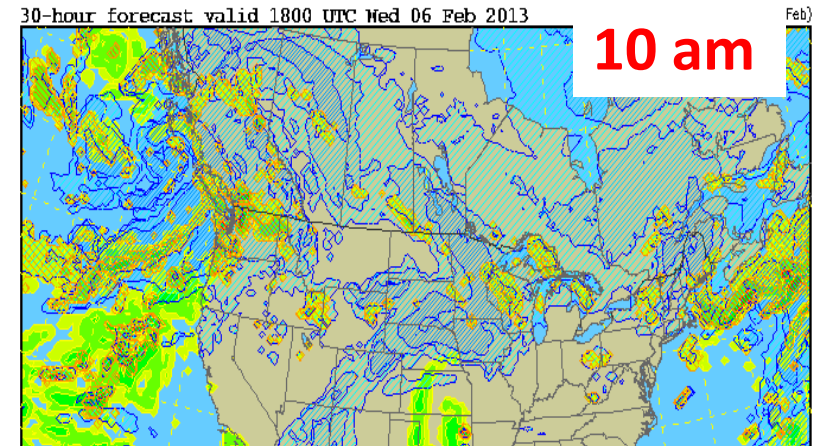


Tomorrow: NAM – SJV remains cloud-free throughout the day. Clear patch of water off LA, increasing throughout day. However, marine clouds hard to predict this time of year.

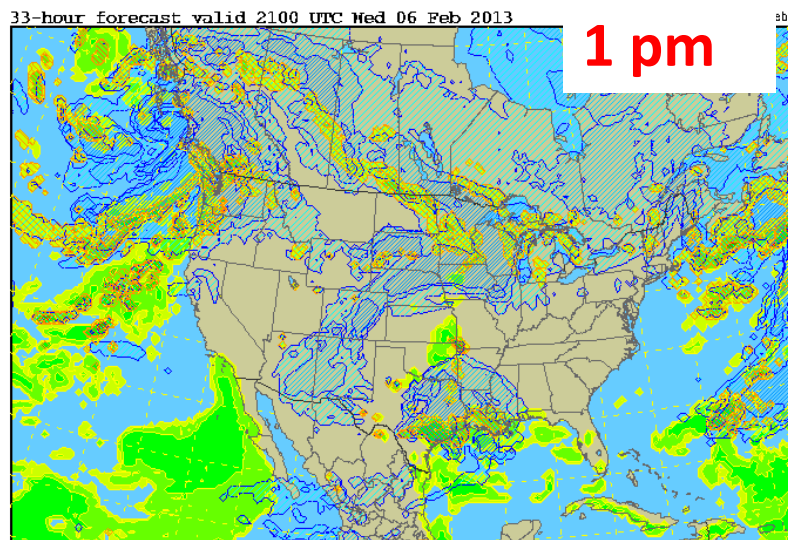
Integrated liquid and frozen hydrometeors (all levels)



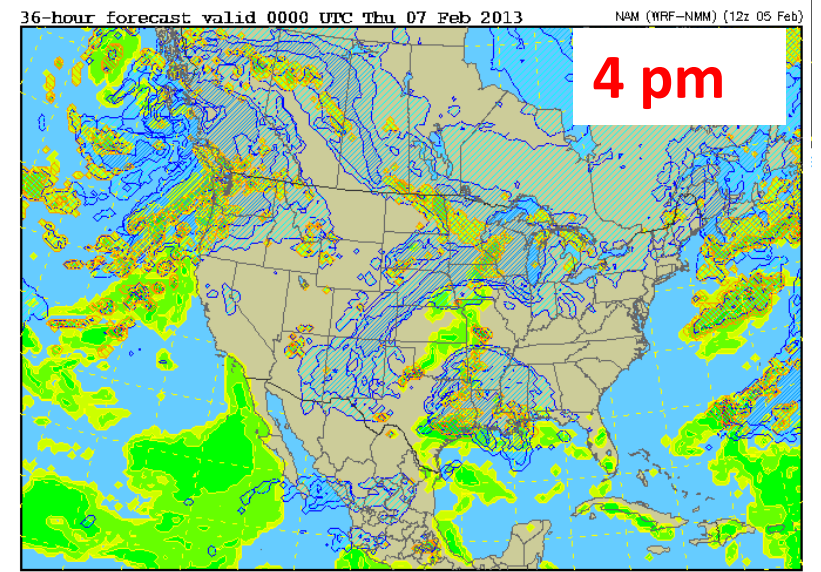
Integrated liquid and frozen hydrometeors (all levels)



Integrated liquid and frozen hydrometeors (all levels)



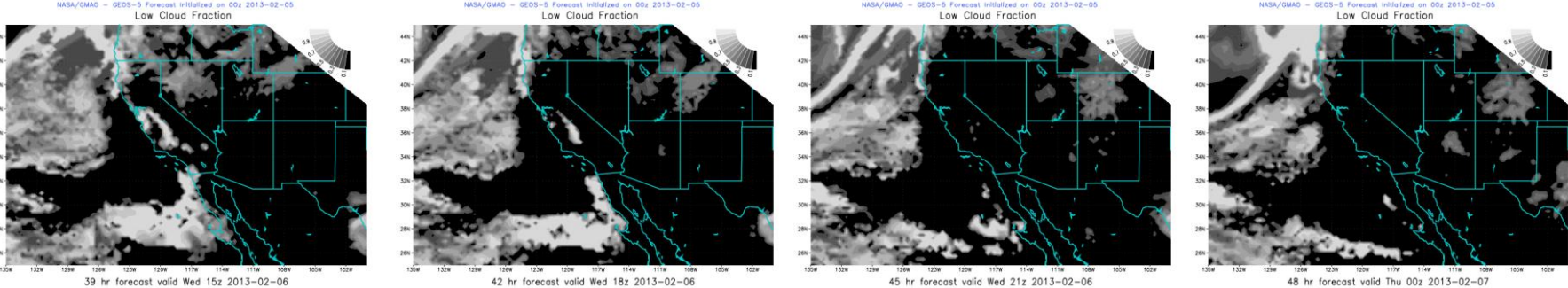
Integrated liquid and frozen hydrometeors (all levels)



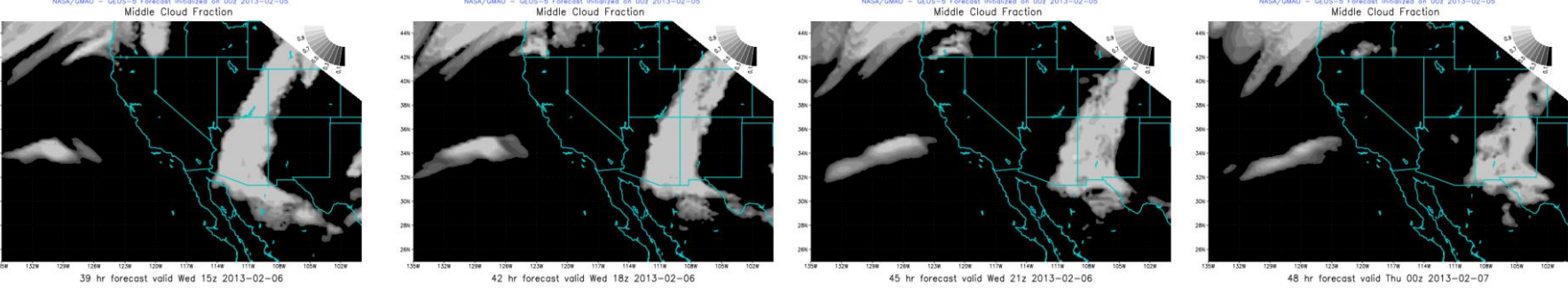
Wednesday: GEOS5 – SJV remains cloud-free throughout the day, but morning fog present. Coastal waters clear of low level clouds, but cirrus moves in later in day.

7 am 10 am 1 pm 4 pm

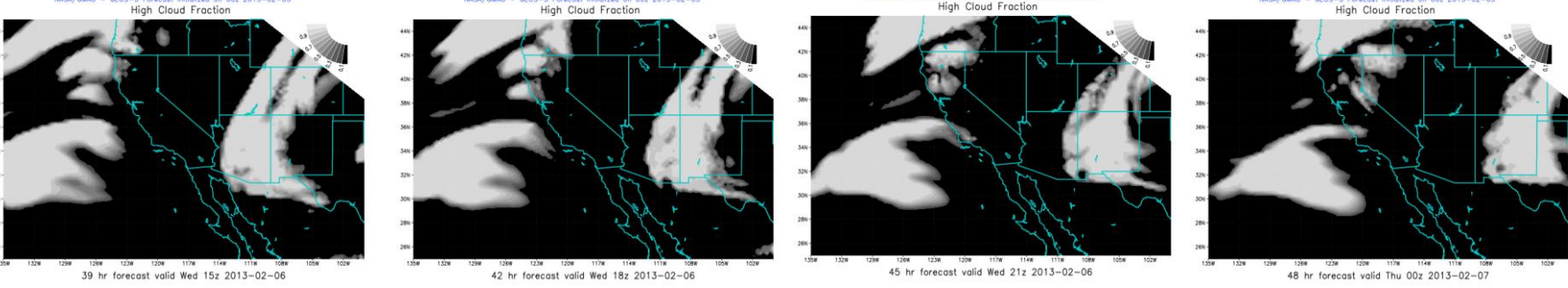
GEOS5 – Low level



GEOS5 – Mid level



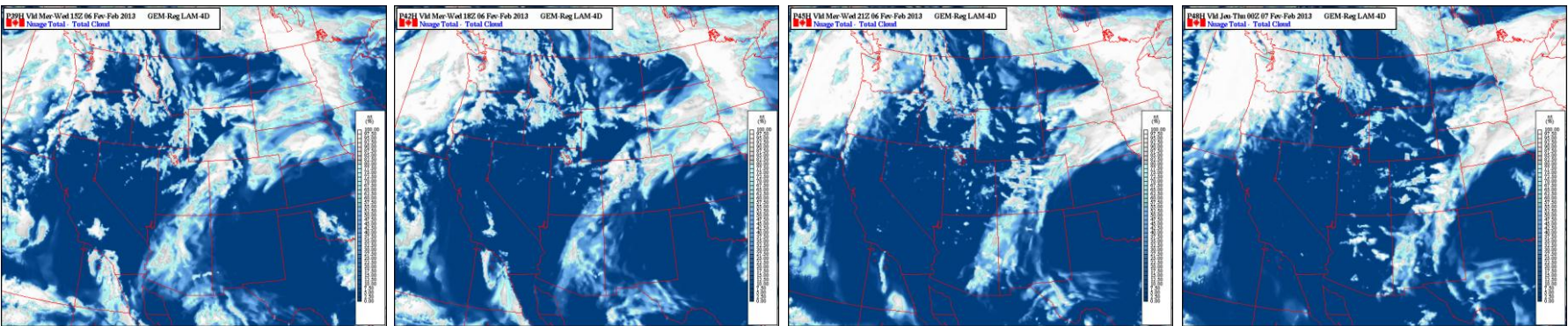
GEOS5 – High level



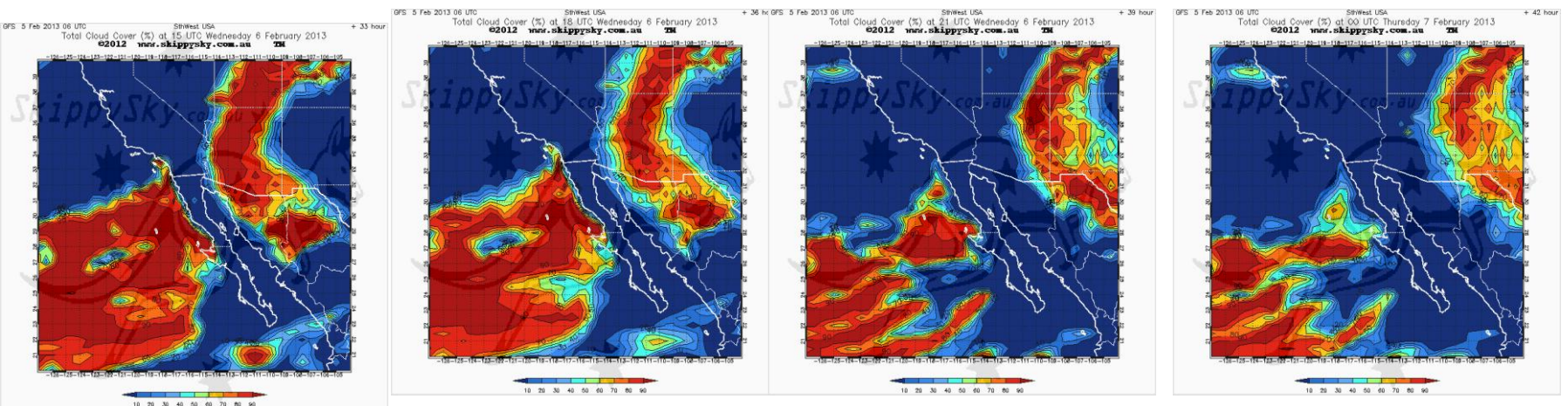
Tomorrow: Canadian – SJV remains cloud-free throughout the day, with exception of morning fog. Coastal waters show more cloud cover than NAM and GEOS5. GFS – Both SJV and most of the coastal water study regions remain cloud-free throughout the day.

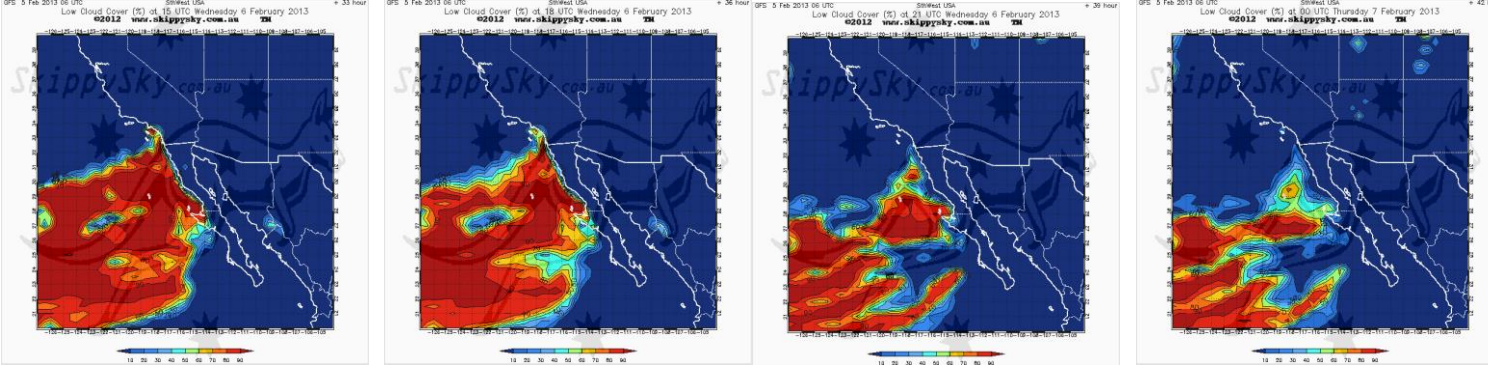
7 am 10 am 1 pm 4 pm

Canadian

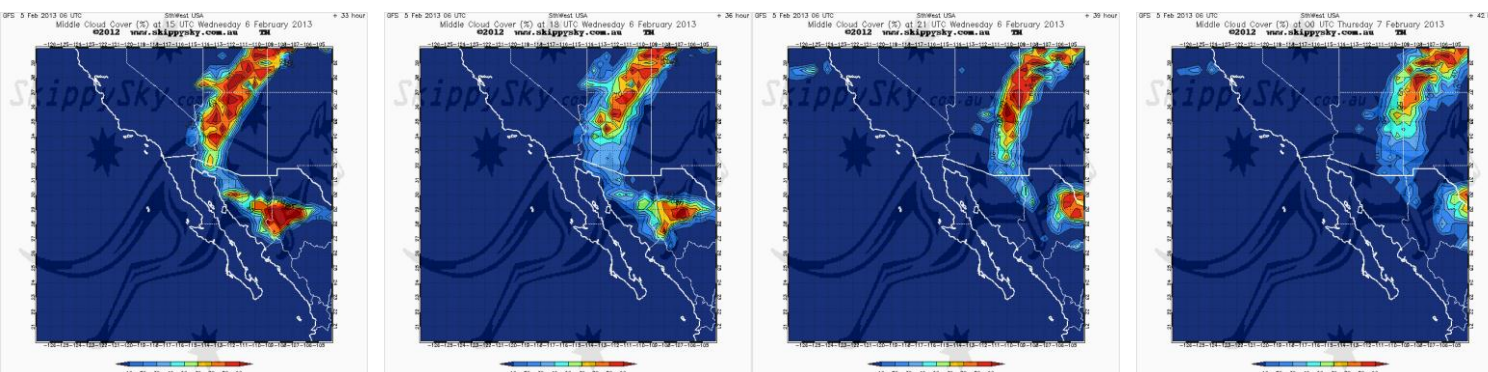


GFS – Total Cloud

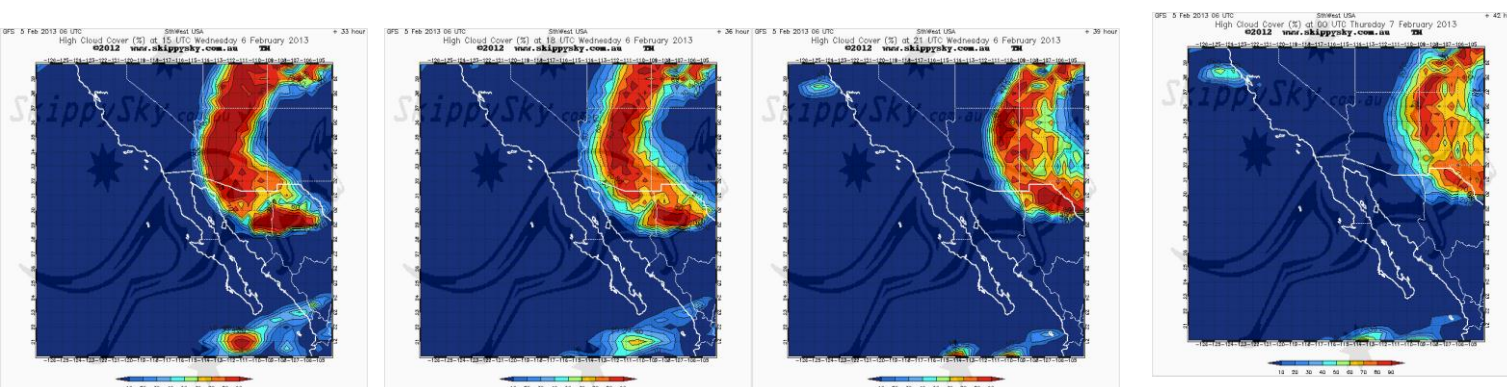




GFS - Low level



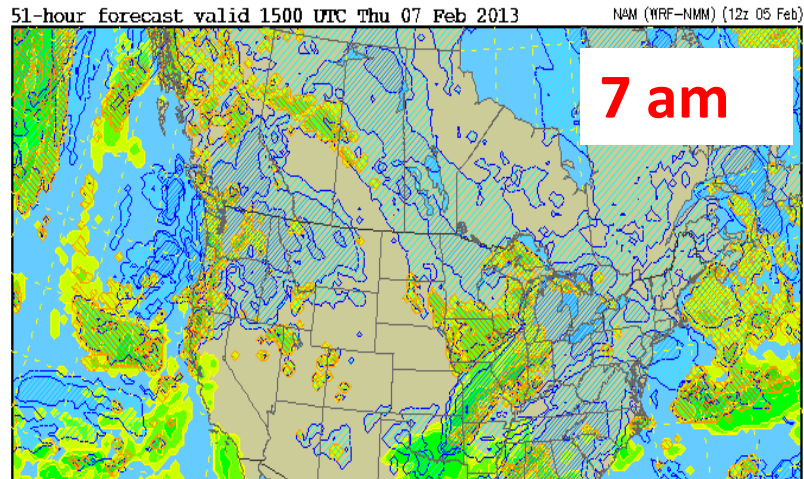
GFS - Mid level



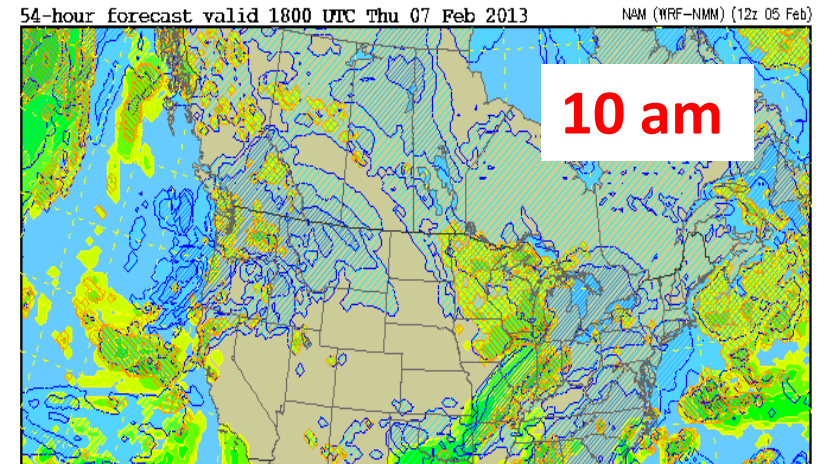
GFS - High level

Thursday: NAM – High level clouds move into the area from the north and west.

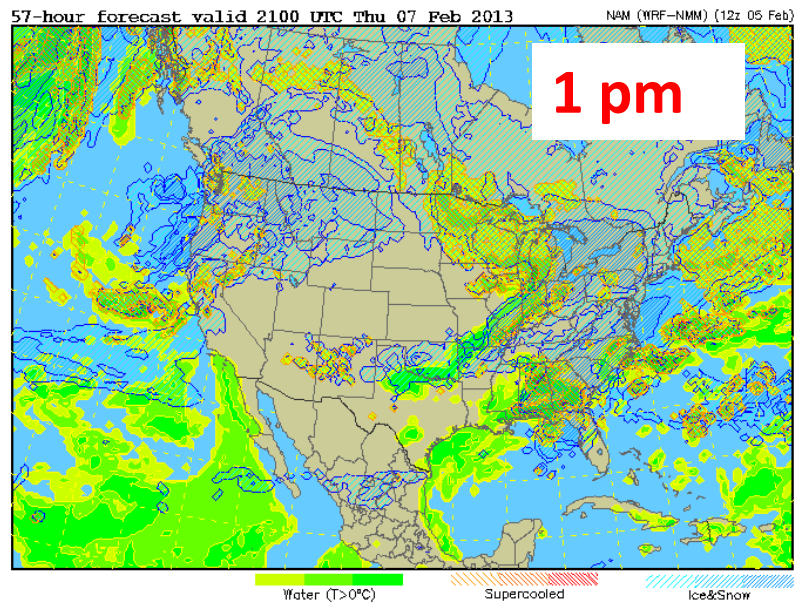
Integrated liquid and frozen hydrometeors (all levels)



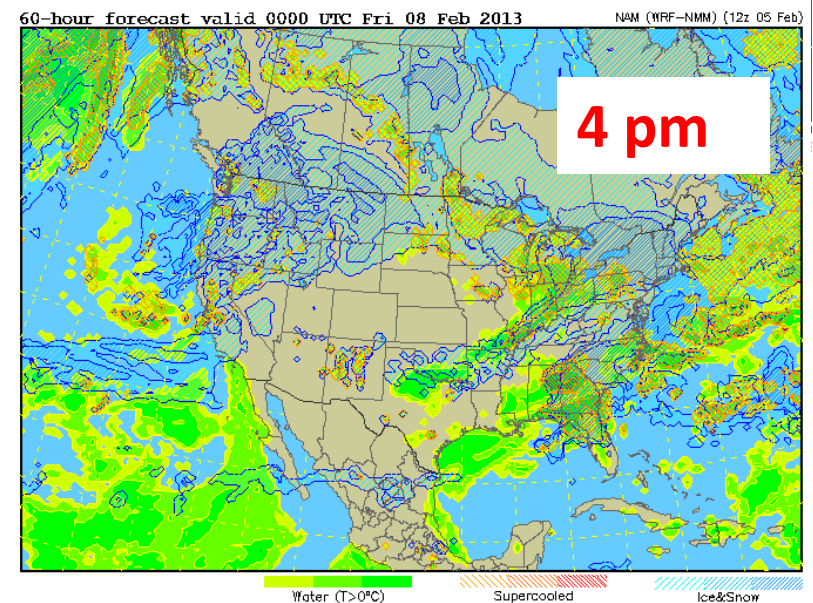
Integrated liquid and frozen hydrometeors (all levels)



Integrated liquid and frozen hydrometeors (all levels)



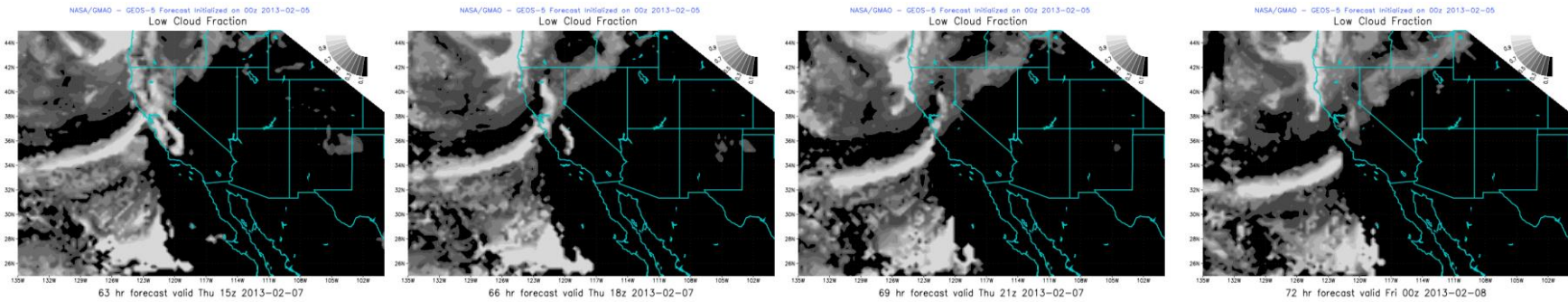
Integrated liquid and frozen hydrometeors (all levels)



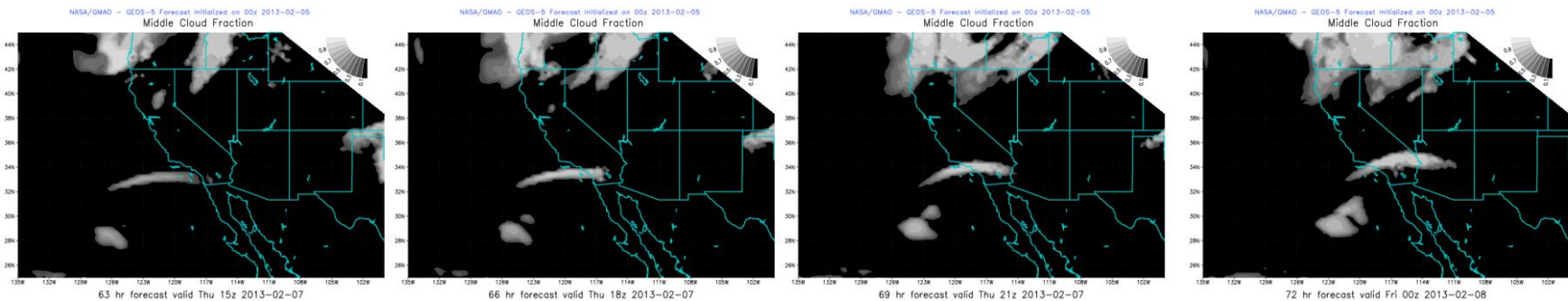
Thursday: GEOS5 – Low level clouds move offshore as the upper trough approaches. Cirrus moving in ahead of that trough and the low level clouds.

7 am 10 am 1 pm 4 pm

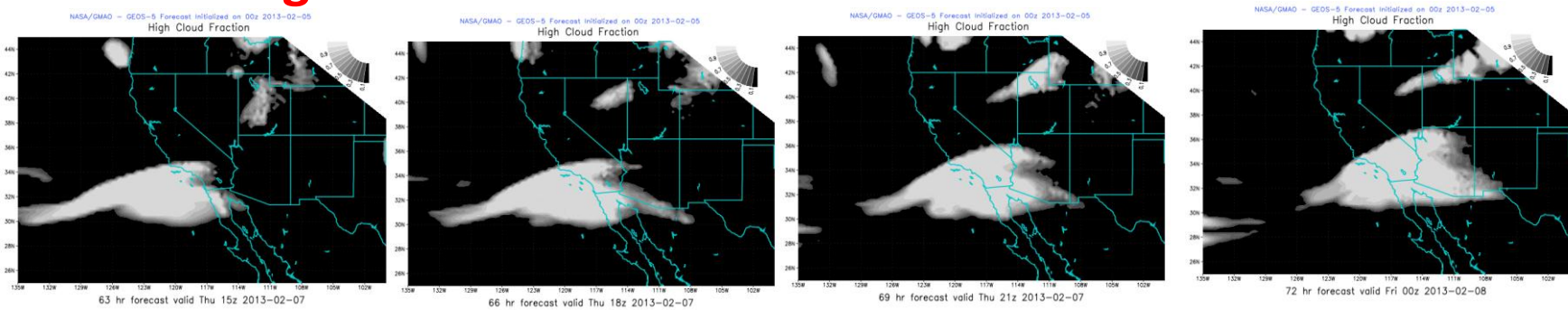
GEOS5 – Low level



GEOS5 – Mid level

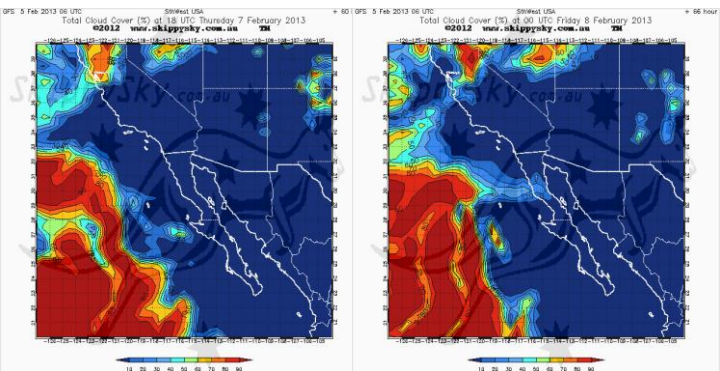


GEOS5 – High level



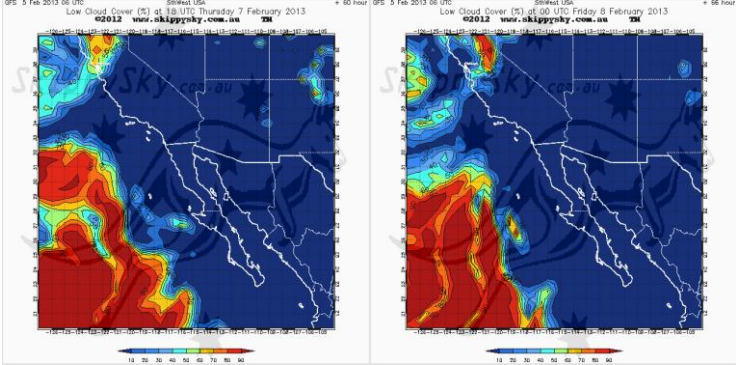
10 am

4 pm

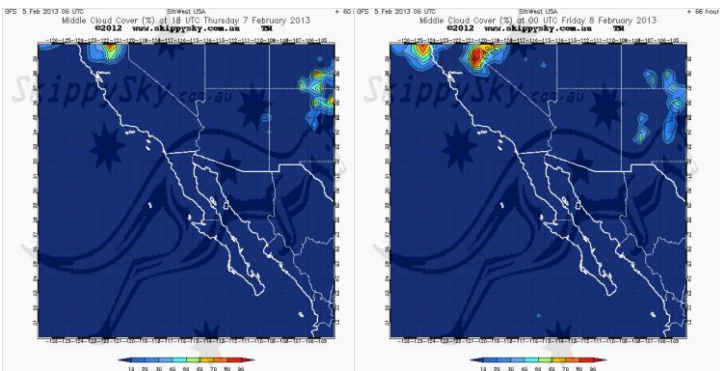


GFS - Total Cloud

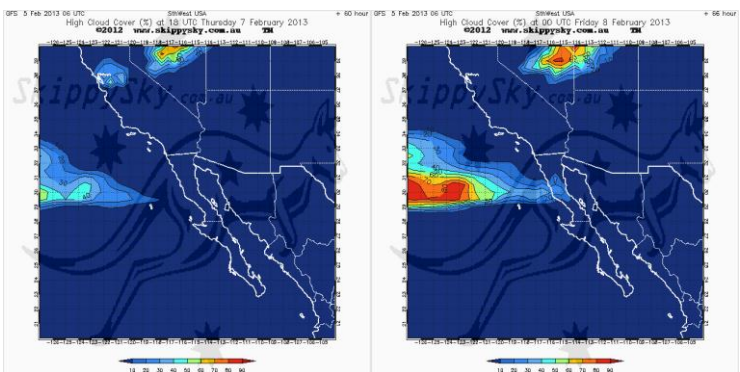
Thursday: GFS – Cirrus moving into the study regions from the NW (though less than NAM and GEOS5), but low level clouds approaching the coast.



GFS - Low level



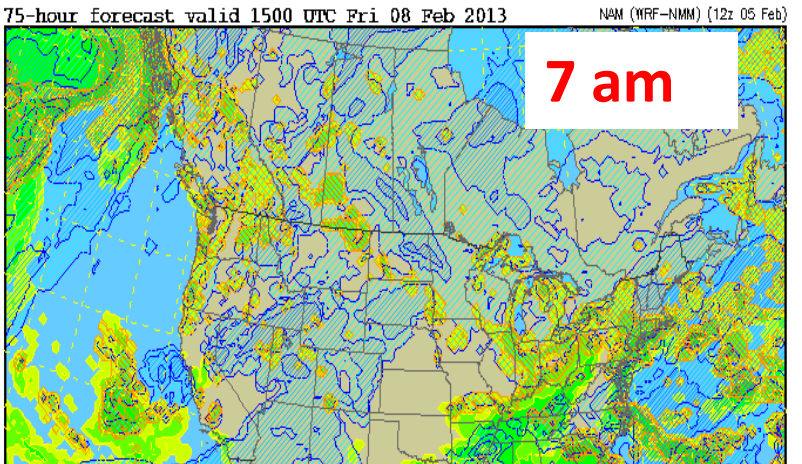
GFS - Mid level



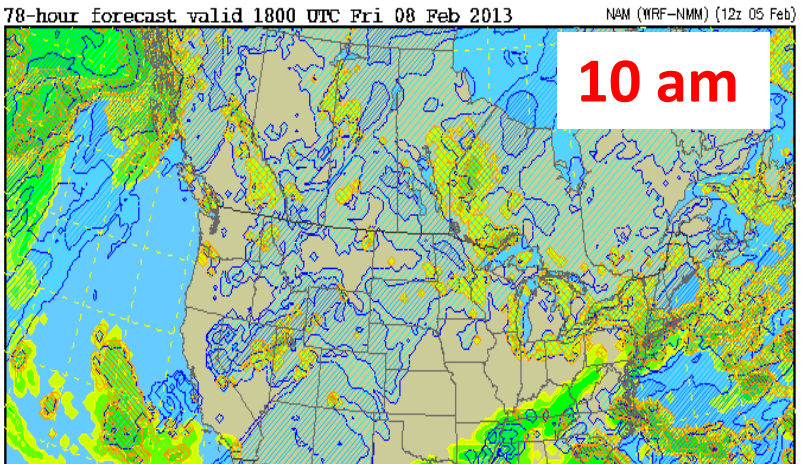
GFS - High level

Friday: NAM keeps cirrus over the SJV and off the coasts throughout most of the day. Some increase in low level clouds by afternoon. (But the storm hits today???)

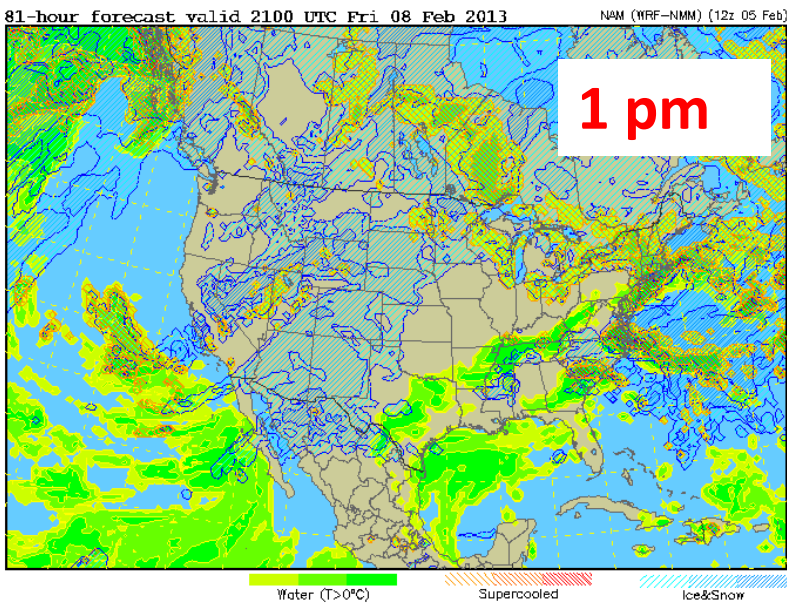
Integrated liquid and frozen hydrometeors (all levels)



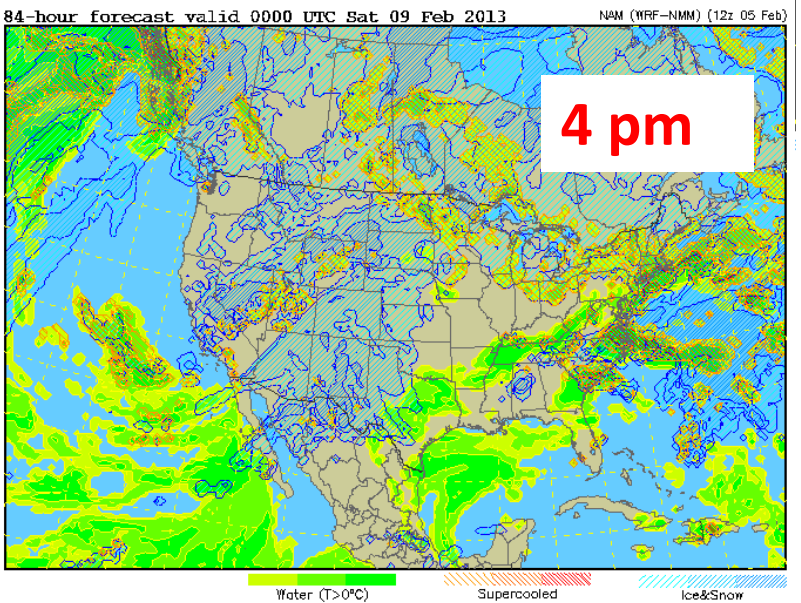
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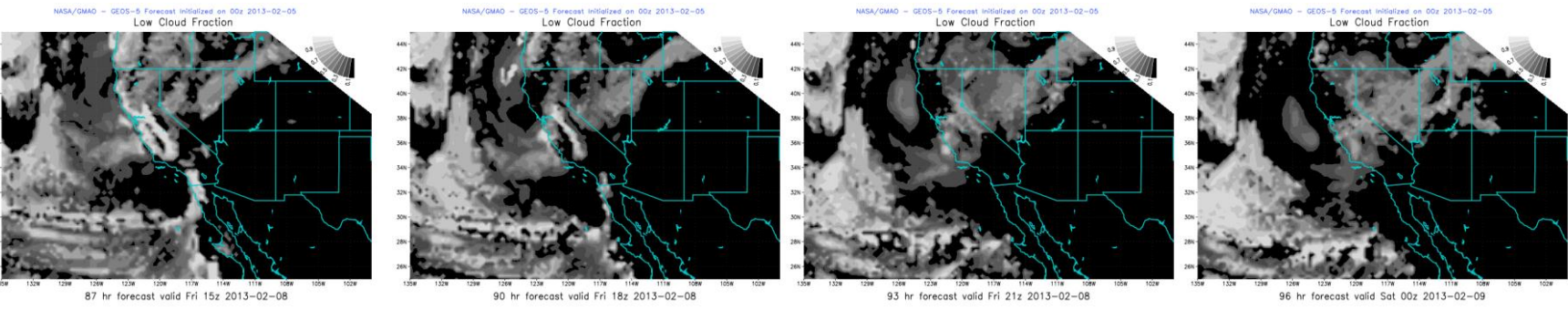
Integrated liquid and frozen hydrometeors (all levels)



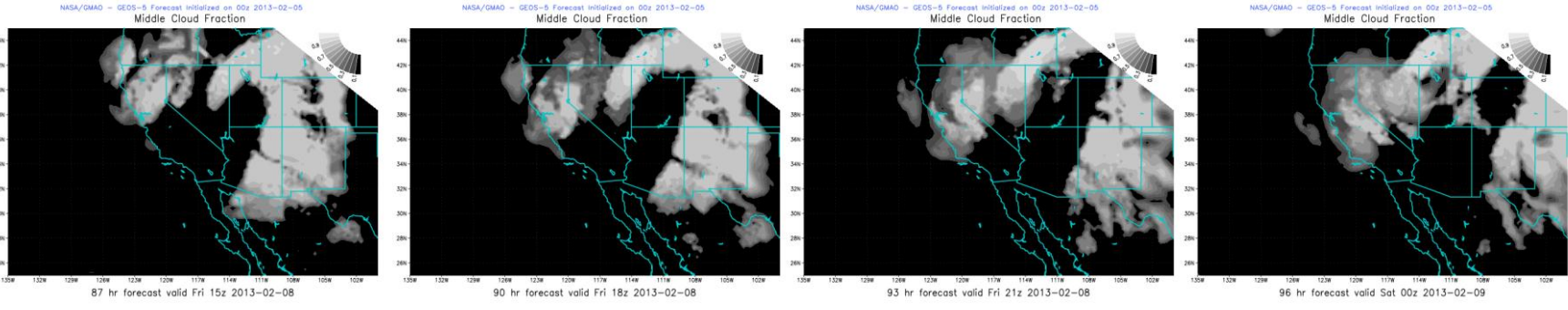
Friday: GEOS5 – Sizable low level cloud deck off the coast decreases throughout the day, with mid-level clouds developing over the SJV during afternoon.

7 am 10 am 1 pm 4 pm

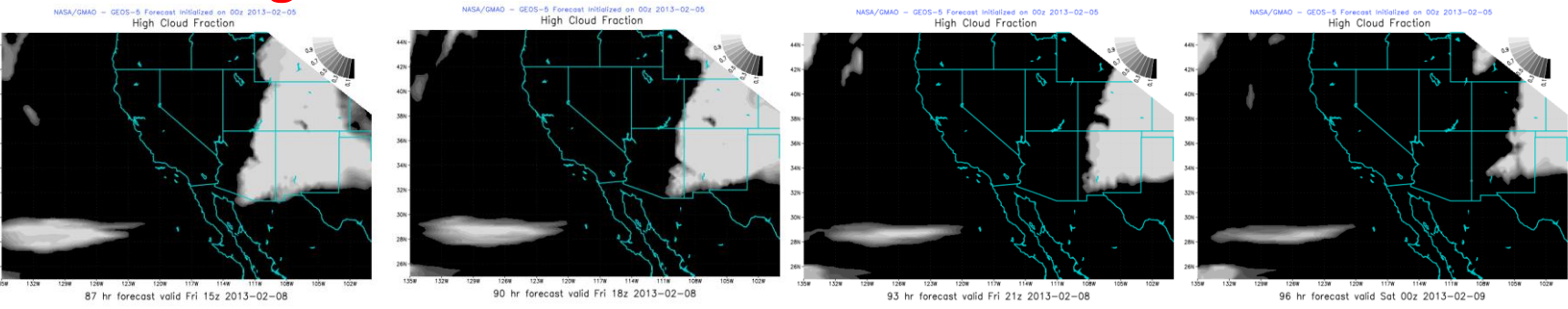
GEOS5 – Low level



GEOS5 – Mid level



GEOS5 – High level



AREA FORECAST DISCUSSION

NATIONAL WEATHER SERVICE SAN JOAQUIN VALLEY - HANFORD CA

227 AM PST TUE FEB 5 2013

.SYNOPSIS...

THERE IS LITTLE CHANGE EXPECTED FOR THE LOCAL AREA WITH DRY CONDITIONS...PATCHY LATE NIGHT THROUGH MORNING FOG AND NEAR NORMAL TEMPERATURES CONTINUING THROUGH WEDNESDAY AFTERNOON. AN APPROACHING SYSTEM LATER THIS WEEK WILL BRING INCREASED CHANCES FOR PRECIPITATION TO THE AREA.

&&

.DISCUSSION...

CONTINUED WARM DAYS AND FOGGY NIGHTS IN THE SJV ARE EXPECTED THROUGH WEDNESDAY. DFA IN EFFECT FOR THE SJV UNTIL LATE MORNING. TEMPERATURES WILL ONCE AGAIN RISE ABOVE NORMAL FOR THIS TIME OF YEAR AND A GRADUAL INCREASE IN HIGH CLOUDS IS EXPECTED AS THE NEXT SYSTEM APPROACHES THE REGION TODAY.

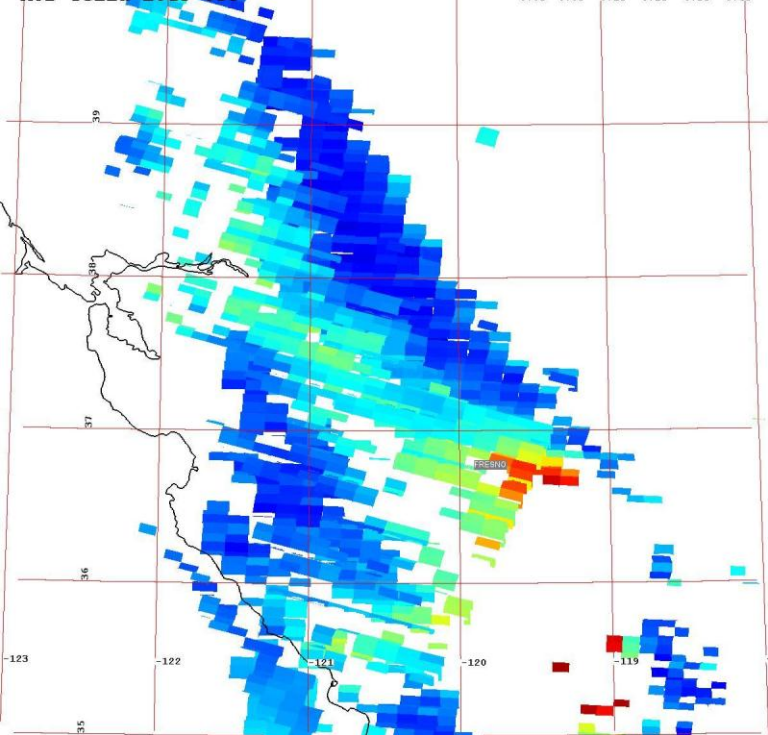
A WEAK RIDGE WILL BREAK DOWN ON WED AS AN UPPER TROUGH OF LOW PRESSURE WILL MOVE THROUGH THE REGION. INCREASE IN CLOUDS AS THE FRONT MOVES THROUGH. IT APPEARS TO BE DRY AT THIS TIME AND WE MAY SEE AN INCREASE IN WINDS BRIEFLY ON WED PM AS THE TROUGH MOVES THROUGH.

ONCE THE TROUGH MOVES THROUGH...THIS WILL OPEN THE DOOR FOR A STRONGER AND COLDER SYSTEM THAT IS EXPECTED TO MOVE IN HERE THURSDAY PM AND CONTINUE THROUGH THE WEEKEND AS THE CLOSED LOW CENTER WILL REMAIN STATIONARY OVER THE OVER SRN NEVADA AREA AND FINALLY KICKS EAST BY MONDAY. VERY COLD AIRMASS ASSOCIATED WITH THIS FEATURE WILL BRING VERY LOW SNOW LEVELS. THERE IS NOT MUCH DEEP MOISTURE ASSOCIATED WITH THE SYSTEM AND WE ARE NOT EXPECTING A MAJOR SIERRA SNOW EVENT AT THIS TIME. HOWEVER...THE BIGGEST IMPACT WILL BE THE VERY SNOW LEVELS AND POSSIBLE IMPACT ON THE CENTRAL CA INTERIORS HIGHLY TRAVELED PASSES IN THE KERN COUNTY MOUNTAINS.

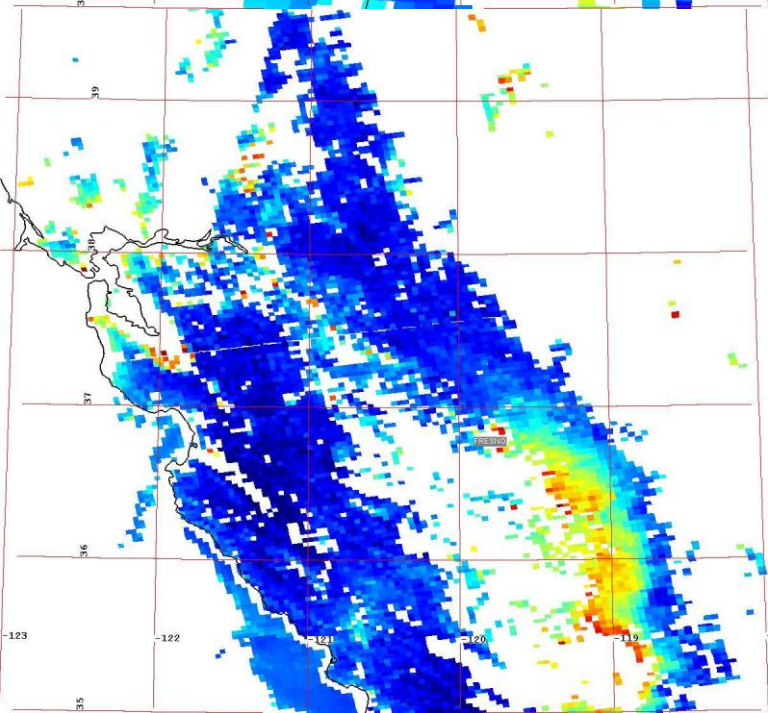
SNOW LEVELS WILL GET INTO THE FOOTHILLS AND WE MAY SEE SOME ACCUMULATING SNOW DOWN TO 2500 FEET. MODELS ARE COMING MORE IN LINE WITH THE SYSTEM AND BOTH THE GFS AND THE ECM ARE IN DECENT AGREEMENT ON THE TIMING AND INTENSITY OF THE SYSTEM.

UPPER RIDGE BUILDING IN FROM THE WEST WILL TAKE OVER THE REGIONS WEATHER PATTERN BY NEXT TUESDAY WITH A SLIGHT WARM UP ACROSS THE AREA AND DRY CONDITIONS.

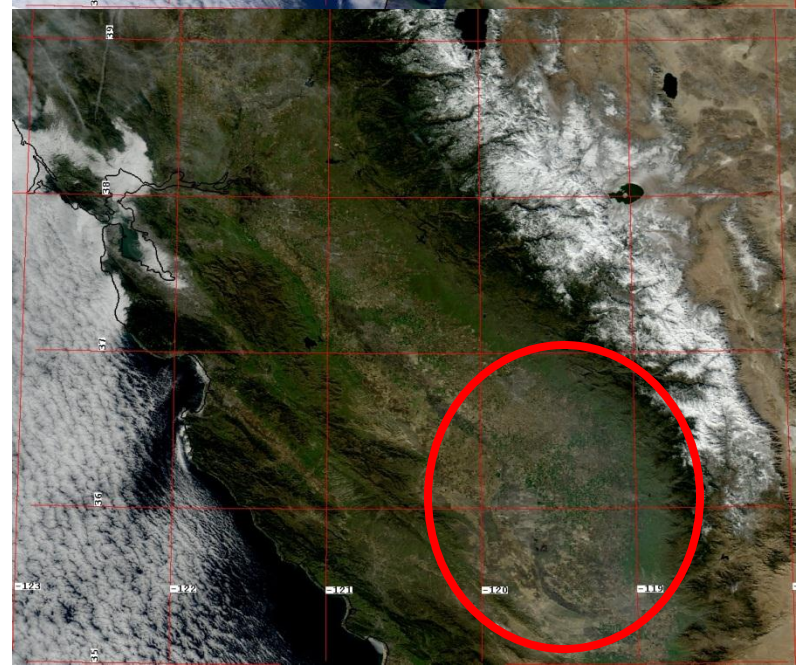
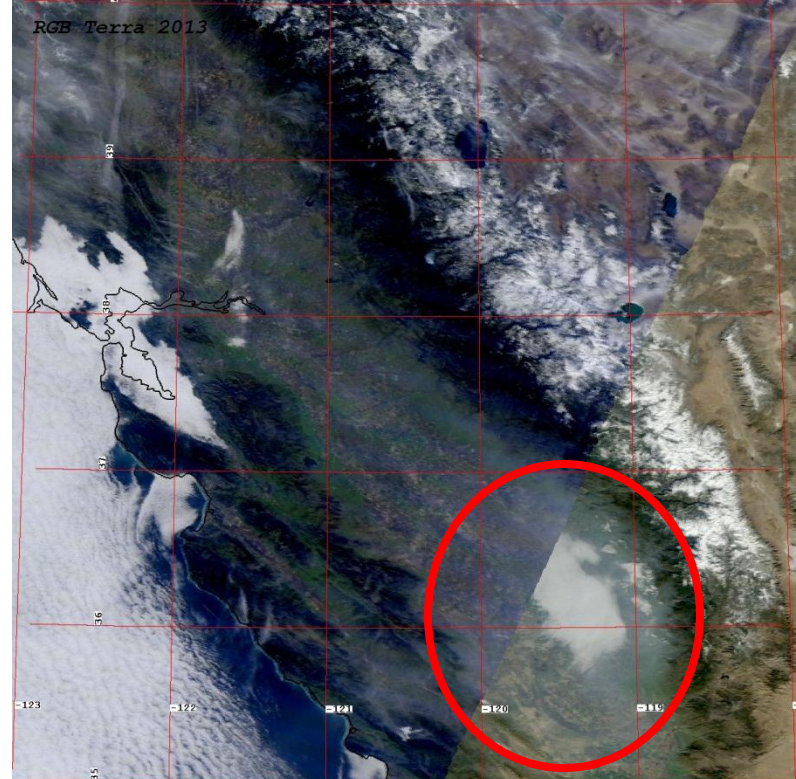
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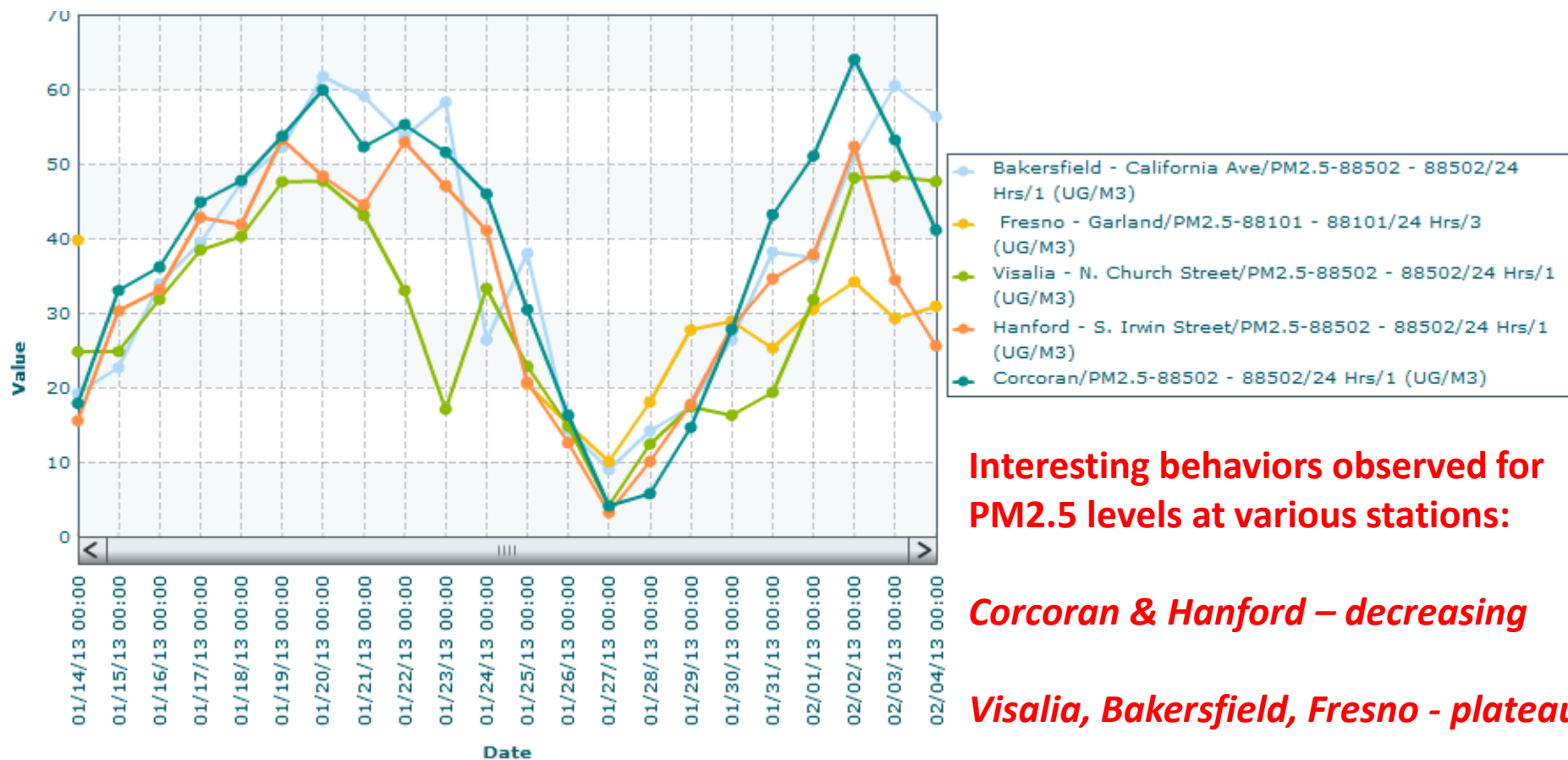
Terra



Aqua



DISCOVER-AQ Sites: Daily PM2.5 ($\mu\text{g}/\text{m}^3$)



Interesting behaviors observed for PM2.5 levels at various stations:

Corcoran & Hanford – decreasing

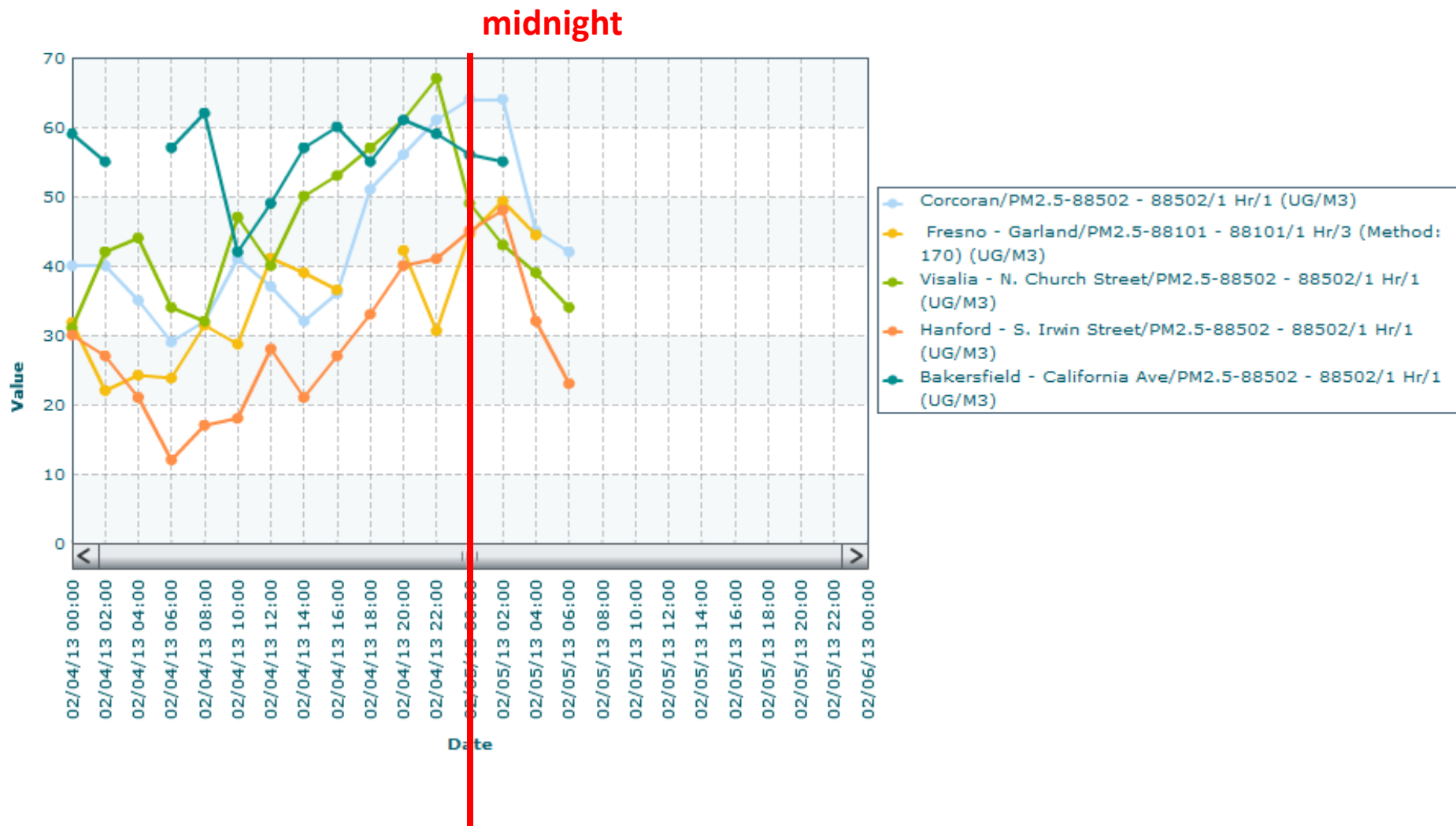
Visalia, Bakersfield, Fresno – plateau

1/14

2/04

DISCOVER-AQ period characterized by two pollution events and one gradual clean-out.

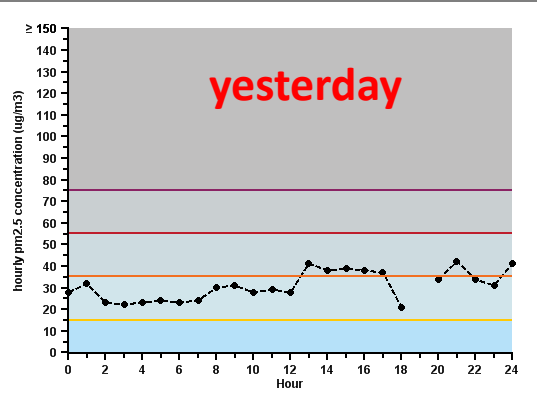
DISCOVER-AQ Sites: Hourly PM2.5 ($\mu\text{g}/\text{m}^3$)



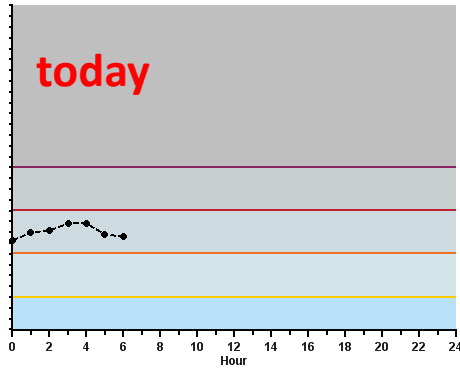
February 4th (Monday) & 5th (Today)

Fresno-Garland

Air District Real-Time Outdoor Activity Risk

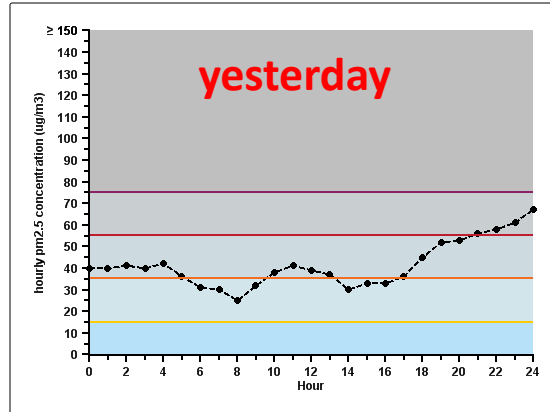


Air District Real-Time Outdoor Activity Risk

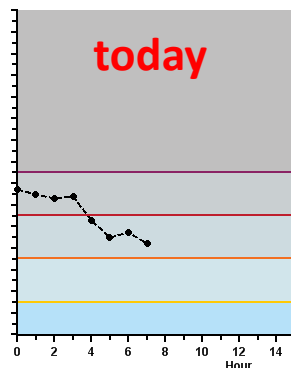


Corcoran

Air District Real-Time Outdoor Activity Risk

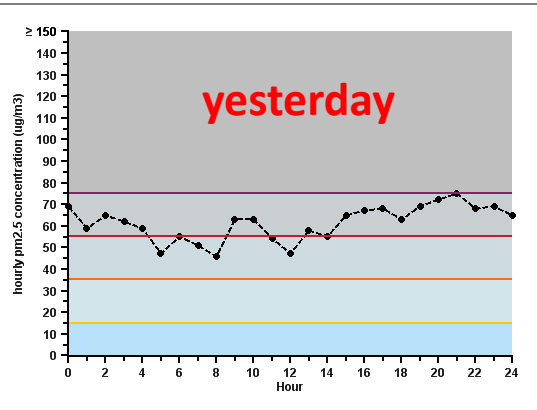


Air District Real-Time Outdoor Activity Risk

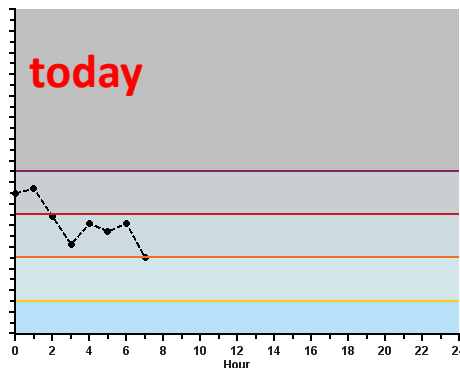


Bakersfield

Air District Real-Time Outdoor Activity Risk

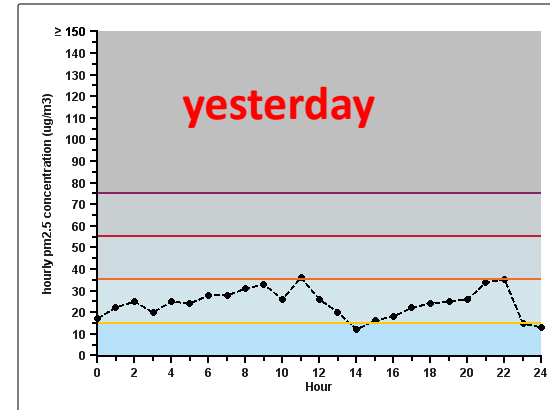


Air District Real-Time Outdoor Activity Risk

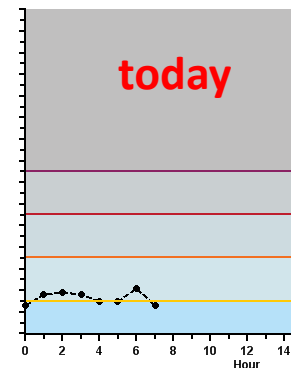


Stockton

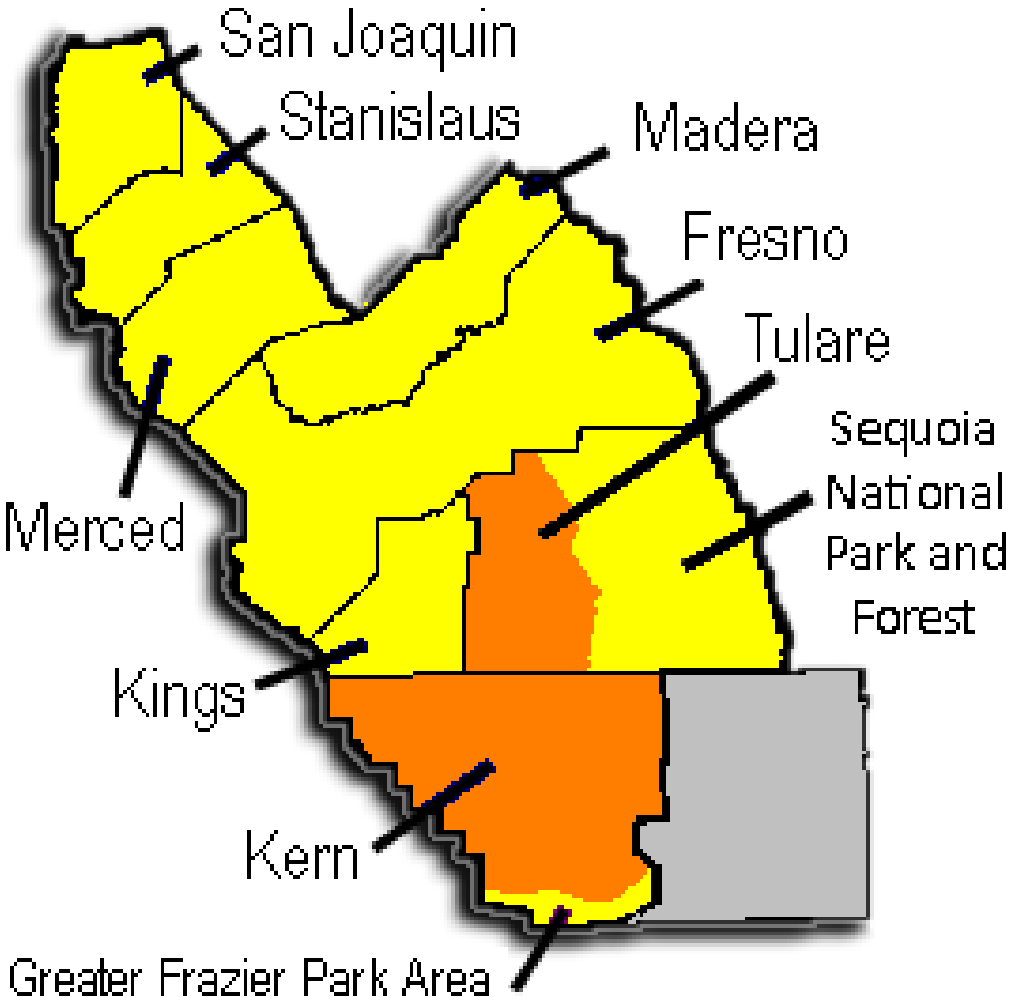
Air District Real-Time Outdoor Activity Risk




Air District Real-Time Outdoor Activity Risk



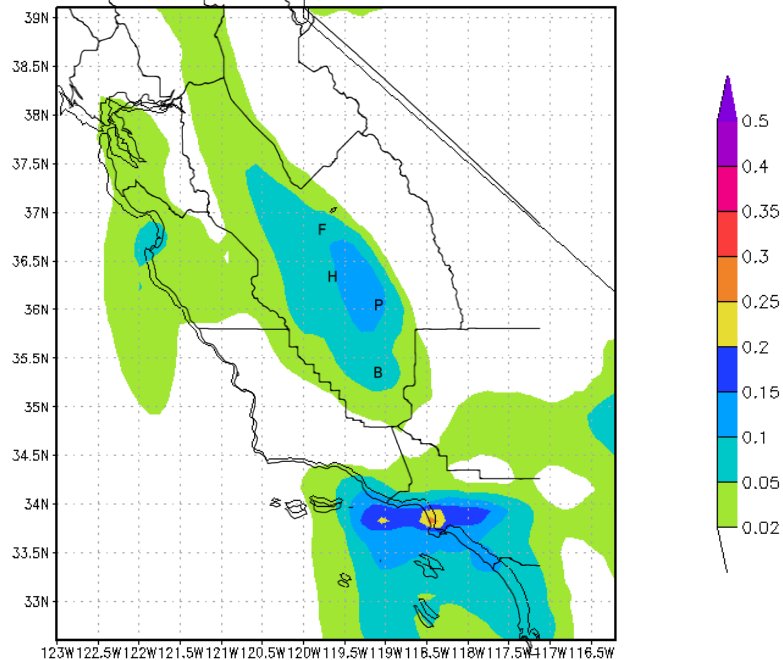
SJV APCD Daily Forecast – for TODAY (February 5)



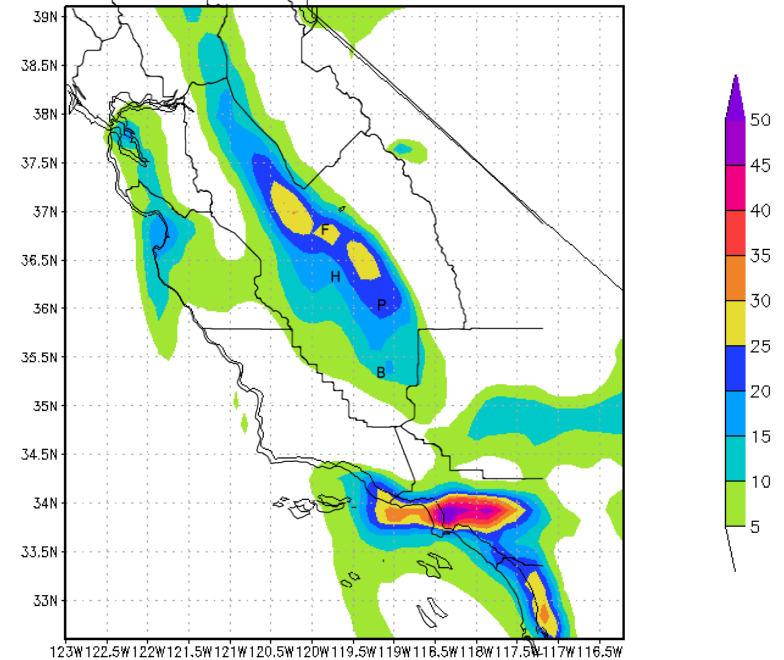
ROAR LEVEL	Ozone (O ³)	Particulate Matter (PM 2.5)
 LEVEL 1 Good	1-59 ppb	1-15 µg/m ³
 LEVEL 2 Moderate	60-75 ppb	16-35 µg/m ³
 LEVEL 3 Unhealthy for Sensitive Groups	76-95 ppb	36-55 µg/m ³
 LEVEL 4 Unhealthy	96-115 ppb	56-75 µg/m ³
 LEVEL 5 Very Unhealthy	>115 ppb	>75 µg/m ³

NOAA CMAQ: Wednesday 10 am = 18 Z

Column AOD [Dimensionless] at surface Valid 18 FEB 06 201



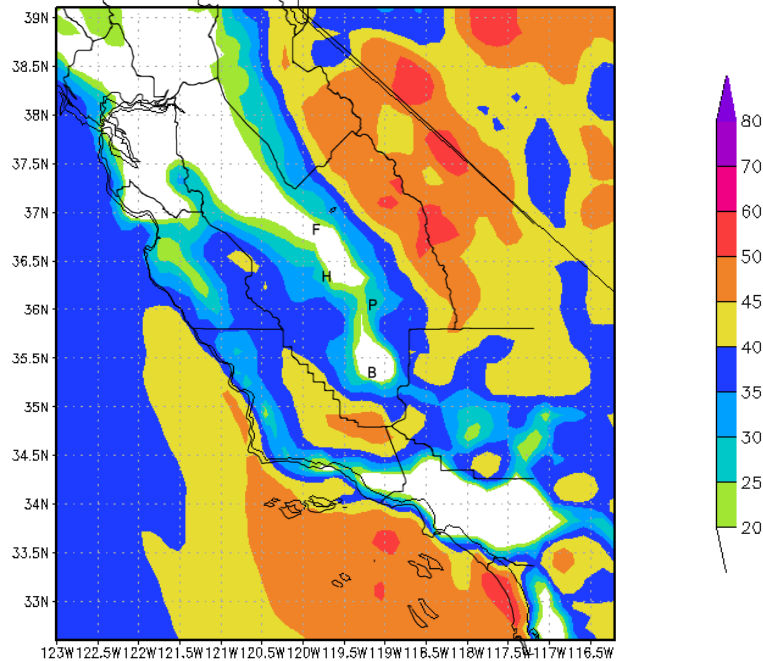
PM25 [$\mu\text{g}/\text{m}^3$] at surface Valid 18 FEB 06 2013



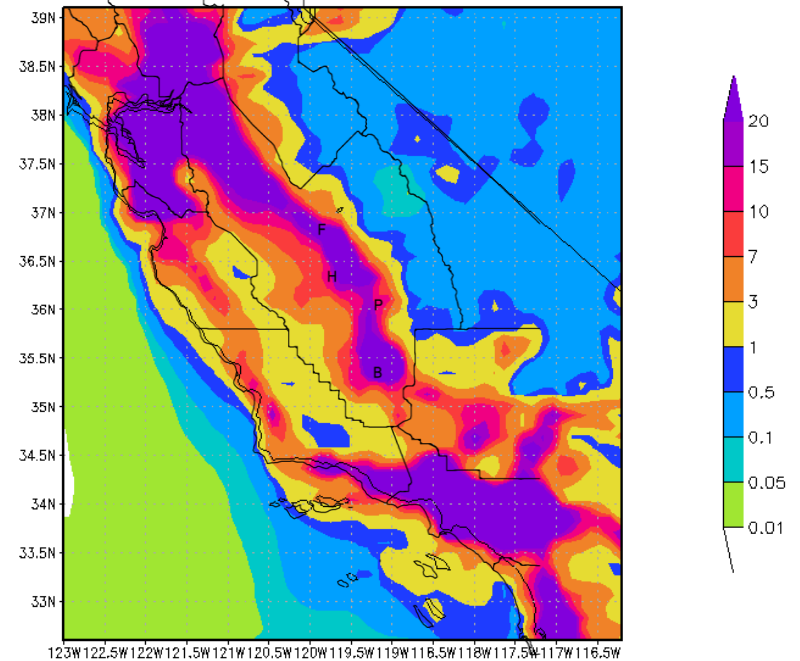
PODEX: Appears to be relatively clean off the LA coast as compared to conditions a week or so ago.

NOAA CMAQ: Wednesday 10 am = 18 Z

O₃ [ppb] at 1013 [hPa] Valid 18 FEB 06 2013

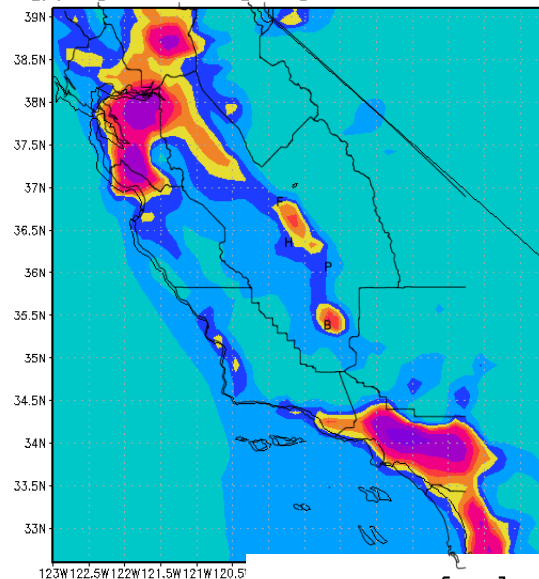


NO₂ [ppb] at 1013 [hPa] Valid 18 FEB 06 2013

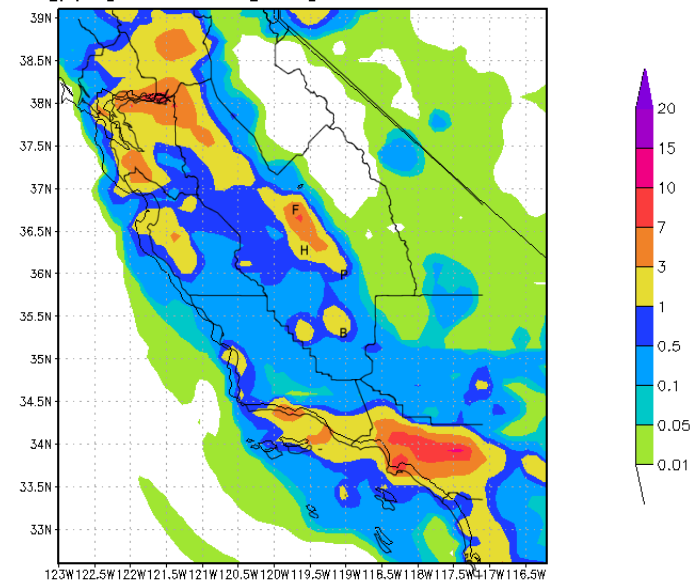


NOAA CMAQ: Wednesday 10 am = 18 Z

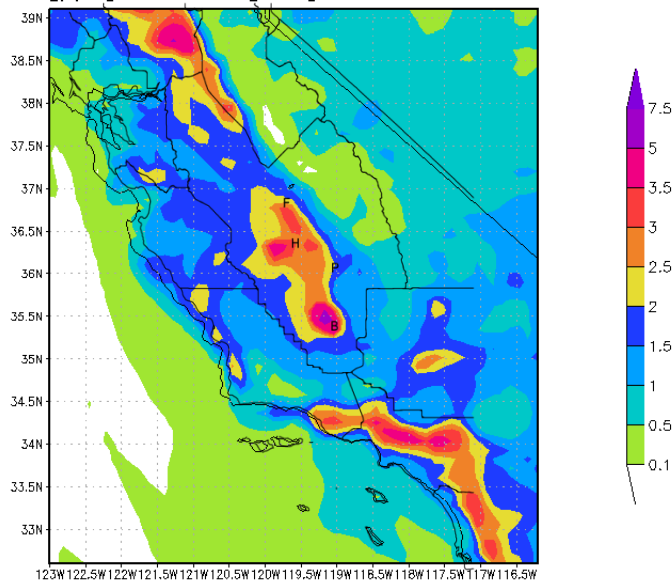
CO [ppm] at 1013 [hPa] Valid 18 FEB 06 2013



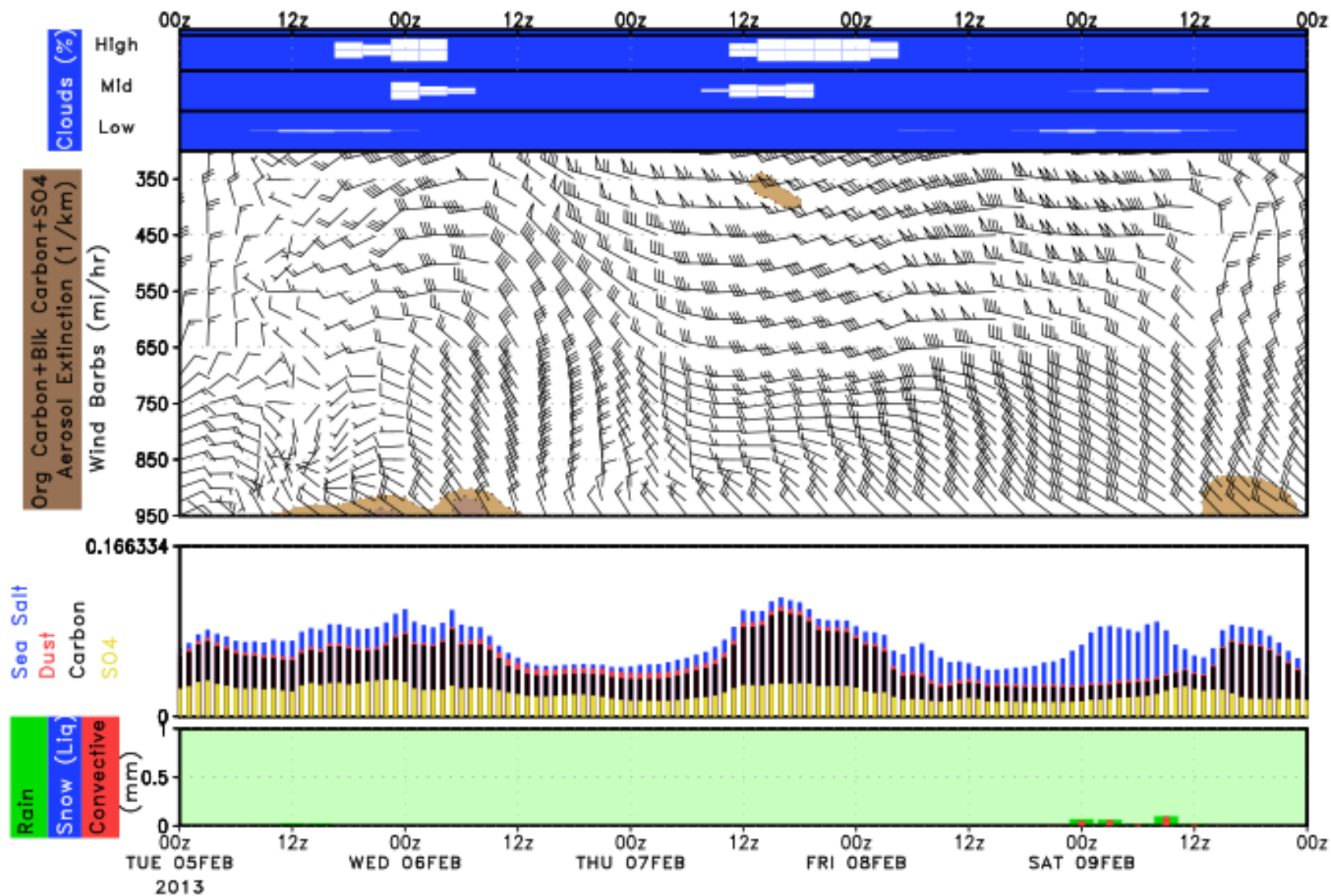
SO2 [ppb] at 1013 [hPa] Valid 18 FEB 06 2013



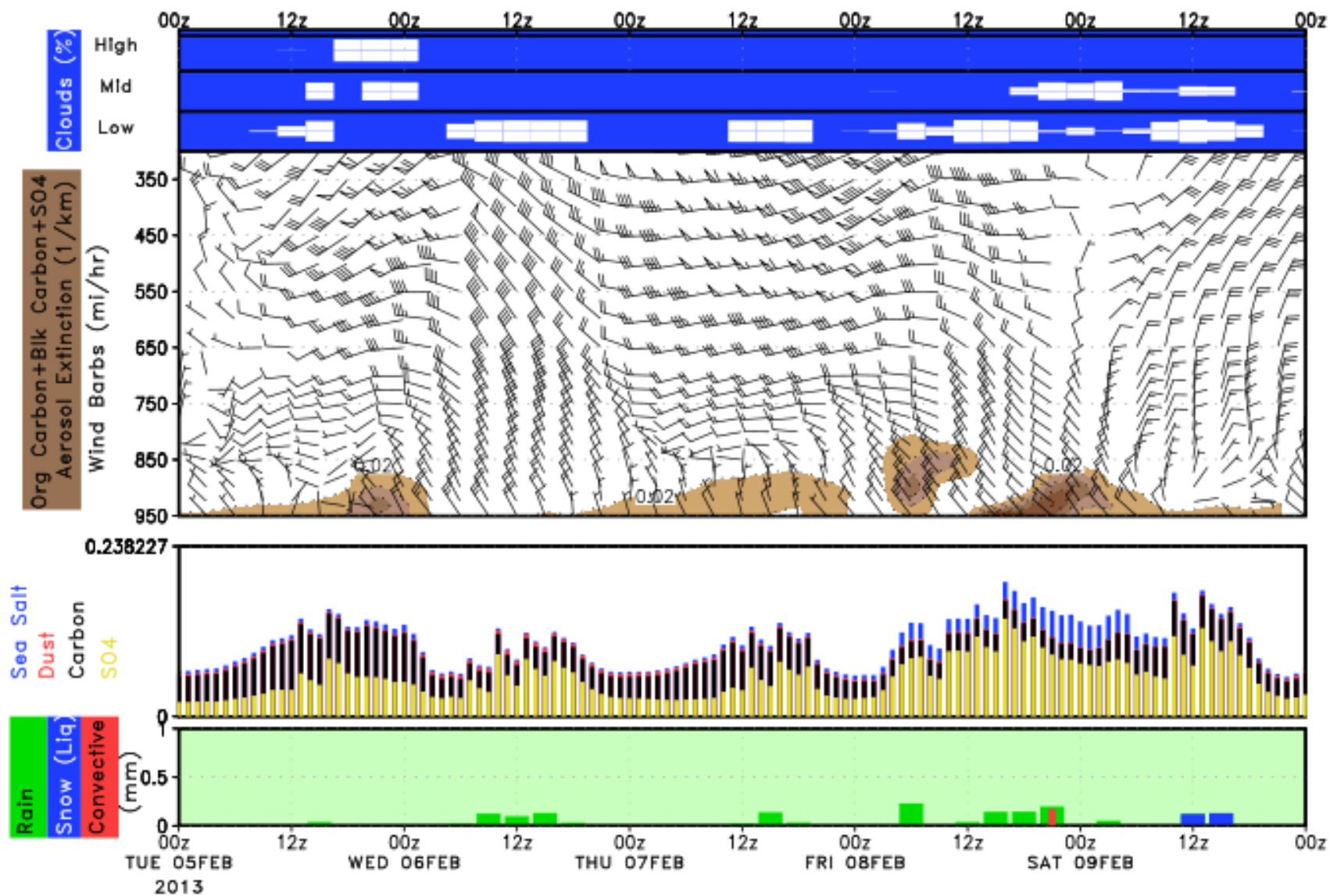
FORM [ppb] at 1013 [hPa] Valid 18 FEB 06 2013



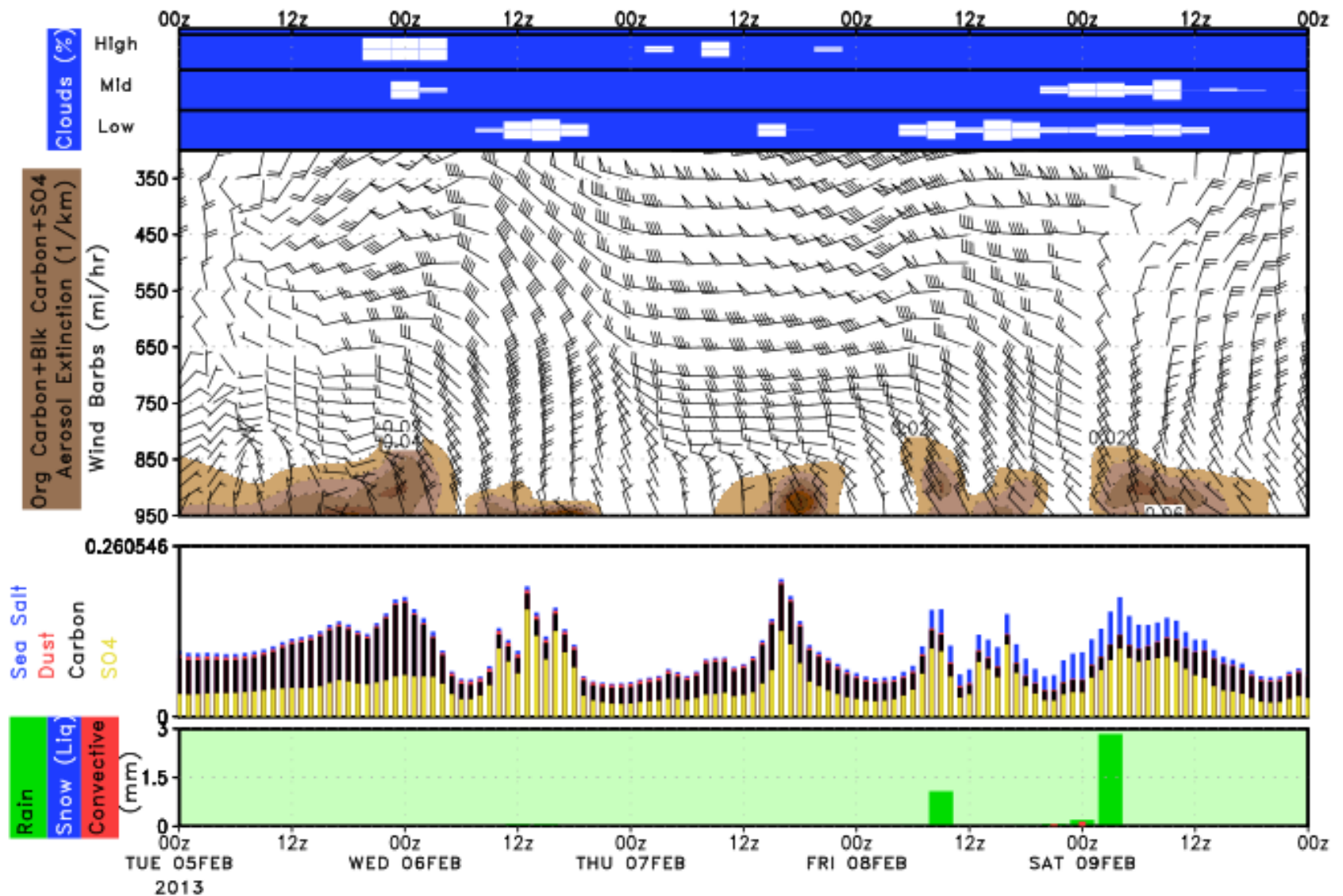
GMAO GEOS5: San Nicolas Is.



GMAO GEOS5: Fresno



GMAO GEOS5: Bakersfield



AQ Summary

NOW: Persistent soupy conditions in the southern SJV for last few days; cleaner in northern end because of generally northerly flow.

TONIGHT: Winds are expected to pick up overnight and could be locally breezy (>10 kts), so PM2.5 levels may drop a bit. SJV APCD forecaster expects Fresno levels to drop the most with marine flow through the Pacheco Pass (near Madera) – this flow typically fizzles by Hanford.

WEDNESDAY:

Bakersfield, Visalia, Porterville – 60's ug/m³

Fresno – dropping to 40's ug/m³.

THURSDAY/FRIDAY:

PM2.5 levels are likely to drop a bit (e.g., Bakersfield & Fresno : 20-30s), but forecaster doesn't expect the SJV to be cleaned out like ~ Jan. 27th. The forecast is somewhat uncertain.

Recommendations

WEDNESDAY: SJV Region free of clouds throughout the day. Fog likely to be present in the morning, but stronger winds after frontal passage will prevent it from becoming dense. Low level clouds may impact Bakersfield and Porterville (like Monday).

PODEX Models indicate that a somewhat extensive clear patch of water is present off of the SF and LA coasts. However, they do not agree about the extent of low clouds and the presence of high clouds. NWS Monterey and Oxnard gave a 50/50 chance right now of that clear patch being present (depends on the cold front today). The farther west, the more clear of clouds right now.

THURSDAY:

SJV Strong trough moving brings first cirrus and then nimbostratus to the region by Thursday afternoon and into Friday.

PODEX Models indicate some clearing after the passage of the cold front, but disagree again on extent of coverage and the types of cloud present. NWS Oxnard and Monterey indicate the same forecast for Thursday as for Wednesday, with the possibility of clear patches of water, but the uncertainty is very high (depends on that second cold front).